COAL AGE

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The War Is Won, Now Let Us Win the Peace

PEACE has its problems not less acute than war, especially the peace which immediately follows a conflict. The reason why peace has such dangers is not so much because it is inherently dangerous—for it is not—but because the public prepares itself for an immense reconstruction and does not exhibit the patriotism of the war period in meeting the problems of peace as they arise. If people would only say that business will go along as usual after the war, there would be no danger of any disturbance.

Unfortunately, there are some unwise persons who believe that peace will furnish an opportunity for wage adjustments. There are labor men who scheme to seek raises in wage, and there are manufacturers and operators who expect reductions. All such unwise spirits who seek their own and not their nation's advantage are to be severely reprobated.

The cost of living and of commodities will not change markedly, as some are prone to think. It is based on wages, and these must not be meddled with. If wages are raised, the cost of living must go up, so what is the advantage to labor in raising them? If wages are lowered, profits will not be increased, for prices will go down with wages, so where is the advantage to capital in reducing the size of the fortnightly pay? Every good citizen will do his best to keep both wages and prices stationary, as a change in either will work to the detriment of us all.

There is the threat of foreign competition, but it is remote in time and will probably never eventuate. No one will be able to fill the insatiate need of the world for a long time. There are no large stocks on hand to be dumped in our markets, and before Europe can become settled and have goods to ship here in quantity the wages of Europe may be lifted almost to the American level.

It must be remembered that never was there a time when wealth was so great or so generally distributed. Everyone today owns a bond. So everyone has buying power should any dislocation of industry lay him out of work. There are the means in hand, therefore, for correcting any temporary trouble. Nearly every corporation has its nest egg. Usually up to their necks in debt, corporations are in general marvellously woebegone organizations. During the months of war most of the corporations have provided themselves with Liberty Bonds which would strengthen their position should any slackness intervene, for it would furnish excellent collateral for a loan. So neither individuals nor corporations will have at any time any need to slacken their buying.

During the war all kinds of public work have been delayed. We do not wish to see a lot of unreasoned construction, but much is highly necessary for the national welfare. Schools, roads and railroads demand large expenditure. Whatever is necessary should be done, and we may well prepare to anticipate some of the needs of the future so as to provide work in case the public might be disposed to delay private work pending developments.

But such plans should be carefully labeled "For Emergencies Only," and care should be taken lest the public, having seen the preparations and estimates being made, should insist on the completion of the work involved long before the need for such employment of labor is actually felt. Unfortunately, as there are those who lay their plans to profit, rightly or wrongly, on all public improvements, there is always a disposition to build what has been planned whether a proper occasion presents itself or not. Thus we often find some needless construction standing in the way of the performance of far more necessary work.

America has few reconstruction problems, for she has few war-made cripples, she has few women in industry, and she has suffered but little from the war. The struggle did not last long enough to put us on an ultimate war basis. Not nearly as large a body of men as in Great Britain and France have changed their wonted occupations. For these many reasons there is no occasion for any manner of apprehension if everybody from one end of the country to the other will "sit tight" and not attempt any radical changes or wait for such changes to occur. We have patriotic duties still before us. Let us not fail to be as true to the State in peace as we have been in war. Peace does not in any way absolve us of our citizenship.

IDEAS AND SUGGESTIONS

Method of Working Thick Coal

BY M. STAFFORD
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At present the deep workings of the Canadian Western Fuel Co. at Nanaimo, B. C. (somewhere around 1000 ft.), are in the Douglas seam and extend over large areas. The thickness of the coal varies from almost nothing to over 30 ft. within a distance of less than 100 ft. This variation is caused by irregularities, sometimes in the floor and sometimes in the roof, in other instances in both. The method of working these thick pockets (by "thick" is meant anywhere between 10 to 26 ft.; above that height the coal is very seldom taken on account of the length of timbers required in mining it) is by "straight face"; that

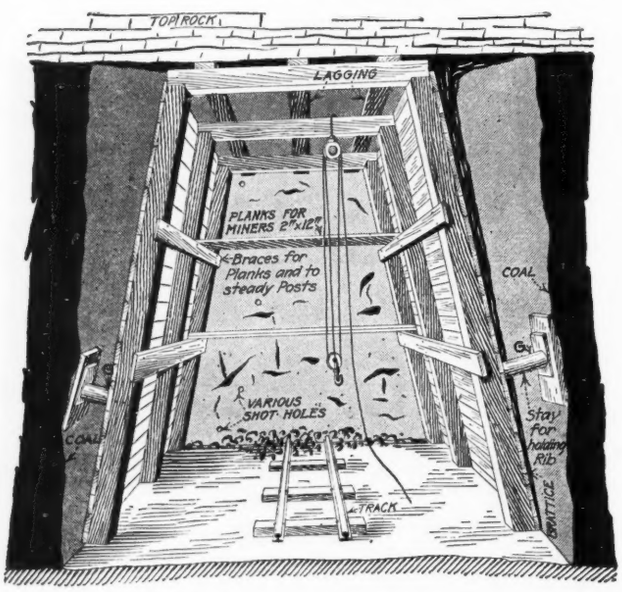

FIG. 1. WORKING THICK COAL FROM PLATFORMS

is, the face is worked as nearly vertical as possible, shooting the bottom out and then putting the perpendicular 6-ft. holes as high as the miner can conveniently reach; the top coal is mined by drilling the shot holes from planks or platforms, as in Fig. 1. Some of these places require as many as three platforms, which rest on planks nailed to the posts.

The work is very tedious. The repeated climbing up to examine the coal face and roof to get down any loose material takes a lot of the miner's time, and this is especially so while timbering. Two men can handle the timber up to lengths from 12 to 18 ft., according to weight, but above these lengths they usually provide themselves with double or single blocks and about 70 ft. of $\frac{5}{8}$-in. rope. Sometimes they are able to run a "set" up between loading cars, at other times on account of the distance between the last "set" and the face exceeding 4 to 5 ft., the loading must wait until the timbering is finished, which takes two good men about half a shift.

In this method of working the sides are neglected as it is impossible to reach them to trim off the loose coal. Consequently, at times the short timbers *G* have

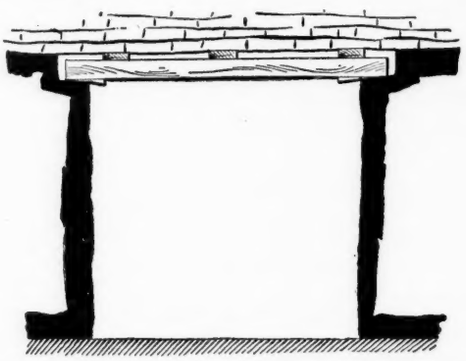

FIG. 2. MINING BY BENCHES—COLLAR HITCHED INTO RIB

to be put in from the rib to the posts. Any pressure from the sides tends to force out the posts. Sometimes the rib gives way, smashing the plank supports and letting down the platforms onto the miners; at other times the roof and top coal fall and cause injury. So you see the miner by this method has no control of his roof or ribs, two points of vital importance in mining. I may add that the company spares no expense in the matter of safety. Anything that the miner desires in this respect is provided. "Safety First" is the slogan, which accounts for so few accidents. So much for that method.

Another method of working thick coal known to many

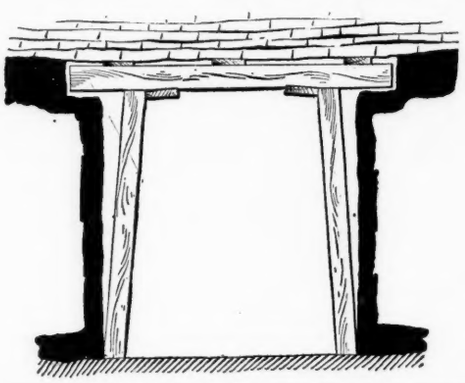

FIG. 3. BENCH MINING—THREE-PIECE SET TIMBERING

miners is shown in Figs. 2, 3 and 4. To the writer it is preferable on account of the miner always having control of the roof and sides; working in comfort; less anxiety about falling roof and sides, and easier timbering. You will see that the collars, Fig. 2, are hitched into the rib, the miner beginning work next to the top and mining the seam in benches, Fig. 4; standing on the loose coal he can trim the sides up pretty well with

the pick. After loading up his loose coal, he erects long posts which can be notched to fit other notches in his bar, if so desired; or cleats can be nailed to the bar as shown in Fig. 3, to form a notch. Another great advantage of this method is that cars do not have to be stopped, the miner can load and timber alternately. When from four to eight places in a district are all timbering at the same time, as sometimes happens, the output falls off considerably.

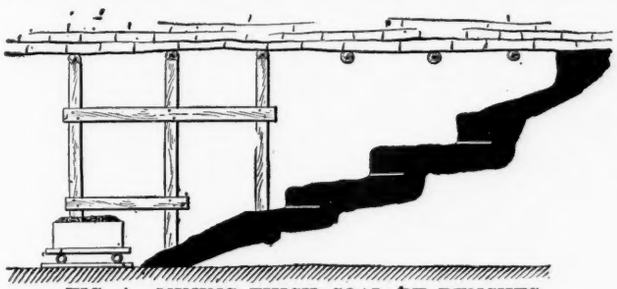

FIG. 4. MINING THICK COAL BY BENCHES

As regards the first method there are the following disadvantages: Danger of roof and sides falling, excessive climbing, danger in working from and upon planks, slower timbering and shortened output, and danger from falling picks and drilling tools. As to the second method, there are the following advantages: The miner has better control of the roof and ribs, the timber is easier handled, the method is safer and greater output can be secured.

A Special Drilling Device

BY J. A. LUCAS
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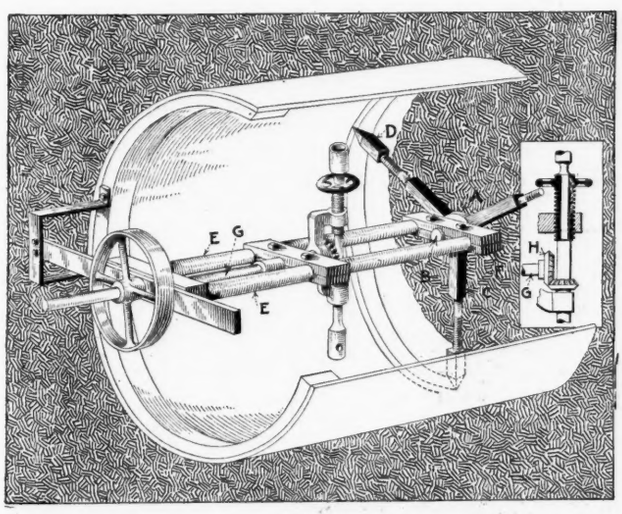
The accompanying illustration shows a device that has been found of advantage when it is necessary to drill a hole from the inside of a boiler or tank. *A* represents a base piece made with a journal stud *B*.



DETAILS OF A SPECIAL DRILLING DEVICE

This base piece is provided with a radial arm *C*, with threaded ends and units made with conical projecting ends, as shown at *D*. One of these pieces is used at each end of the machine, when convenient, for entering and holding the frame. When not convenient to use two of them, one end of the frame is sustained as shown in the illustration or in some other manner that may suggest itself.

The casting *F* is made of two pieces and is provided with a bearing for the pin *B* and holds the ends of the rods *EE*. The actuating shaft *G* carries the bevel wheel *H*, more clearly seen in the figure at the side, which drives the drill spindle, whose ends are of different lengths for convenience in reaching to different distances. The cross-head may be slid along as required on the rods and the revolving frame and the drill turned around to different positions.

Outdoor Mine Substations

BY H. W. YOUNG
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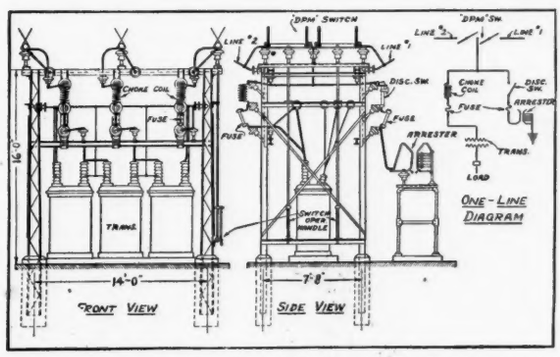
When considering the purchase of power from a transmission system one of the important points requiring attention is the type of control and protecting equipment. The outdoor substation is rapidly being adopted for this class of service, as it has the advantages of low cost, safety and simplicity, which appeal to the operating man.

The 33,000-volt, three-phrase, 900-kv.-a. design shown in the accompanying illustration is applicable to many installations, as it provides for two sources of power supply and thus insures greater continuity of service.

The steel framework is made up in standard sections easily assembled at the point of installation—the desired base dimensions being secured by longer or shorter connecting cross members.



COAL MINE OUTDOOR SUBSTATION

The high-tension control and protecting equipment consists of standard-unit type switches, choke coils, fuses and resistance-type horn lightning arresters connected as shown on the one-line diagram. The switches can be opened or closed from ground level by means of a handle and can be locked in either the open or closed position.

This type of station has the advantage of insuring quick assembly, and when desired the footings can be so made that the equipment can be quickly moved to a new location. The construction is so simple that ordinary labor can be employed for both installation and operation, and since all parts are in plain view inspection from ground level can readily be made.

Keep the boys smiling! Help them while away the lonesome moments by contributing to the War Activities Fund.

Progress of Electricity in Coal Mining

BY FRANK HUSKINSON
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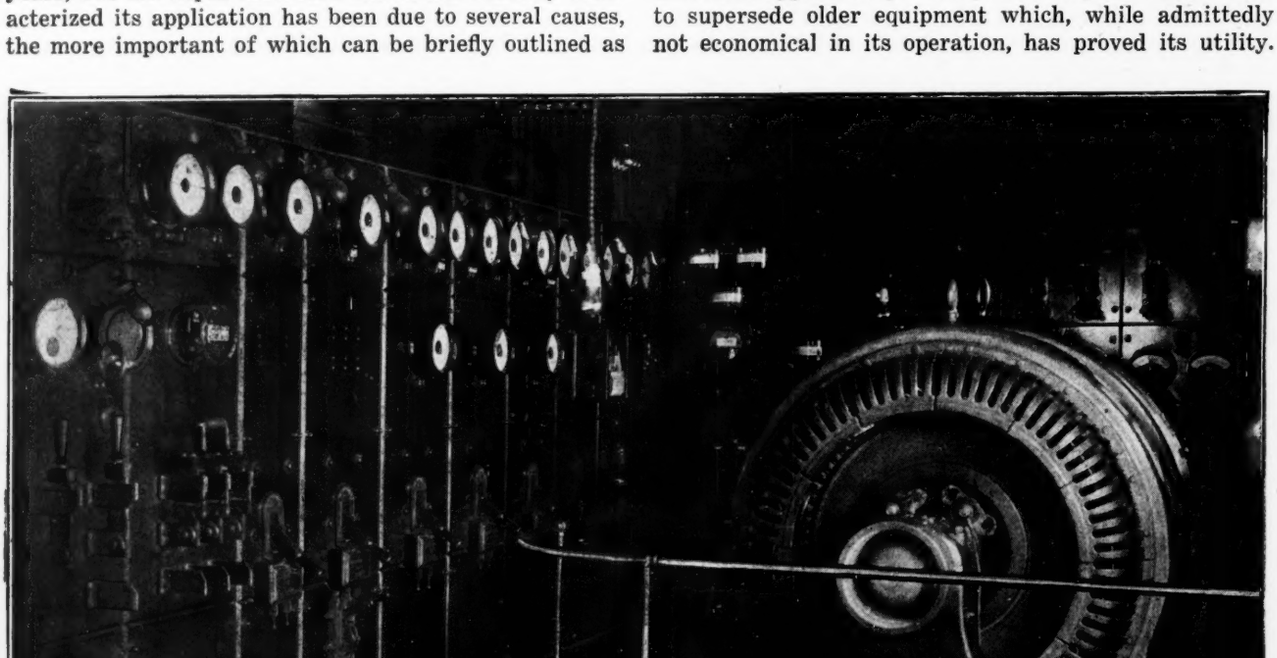
SYNOPSIS—*The great strides made in the use of electrical equipment around the mines has been due to its inherent advantages over other forms of power distribution. Some of these, as well as the various types of equipment most in use, are here enumerated.*

IN THE early days of the coal industry the low cost of fuel and a general familiarity with the use of steam fostered the emloyment of steam engines of various types for hoisting, pumping, ventilation, surface haulage and the driving of conveyors, breakers, tipples, etc. The use of steam underground has, however, always been both difficult and costly, and with even a limited application there it serves to diminish the factor of safety in an industry in which potential danger to workmen must always be considered.

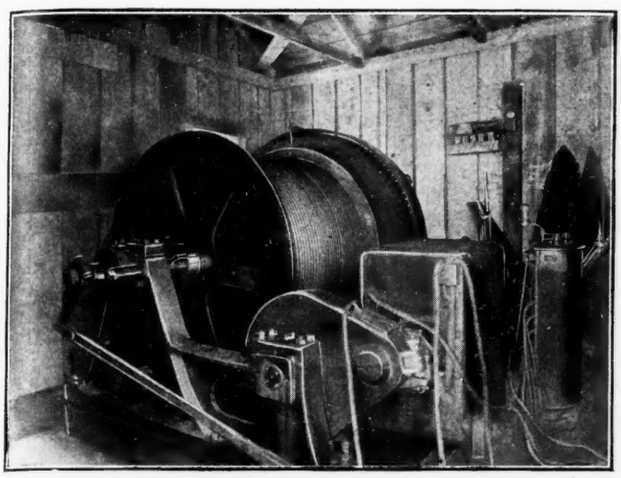
Compressed air for underground work met some of the objections to the use of steam, and as a result was extensively used for this class of work until the advent of electrical service. This at once rendered possible the application of a single form of power to all classes of machinery, both on the surface and in the mine itself.

The use of electricity in coal mining is not new, as it has been employed to a limited extent for many years, but the rapid extension which has recently characterized its application has been due to several causes, the more important of which can be briefly outlined as follows: (1) The improved efficiencies of modern electrical machinery in general, and the increasing use of alternating current with its greater flexibility in transmission over distances beyond the economical limit of direct current distribution. (2) The specialization of electrical machinery for the power requirements peculiar to coal mines. (3) The notable operating economies that have resulted in numerous installations utilizing electric power, even under the severest conditions, and the attainment in practically every case of an increased output for a given power consumption. (4) The necessity for the development of coal fields in which the geological conditions were such that the mines could not be economically operated by the older methods; also the continually increasing distances between the working faces and the delivery points in mines already in operation have tended to render electric haulage practically imperative.

That the foregoing causes have been given the practical consideration which they deserve is demonstrated by the fact that in recent coal-mining developments of appreciable size electricity has been adopted as a source of applied power either wholly or in part. In many of the older mines it would be true economy to scrap a large percentage of the old steam power equipment and replace it with electrical machines. In some cases, however, mining companies are not fully aware of the inherent economy of electric service and its practically universal applicability. They are therefore disinclined to supersede older equipment which, while admittedly not economical in its operation, has proved its utility.



MOTOR-GENERATOR SET AND SWITCHBOARD IN A MINE SUBSTATION



SMALL ELECTRICALLY DRIVEN MINE HOIST

As a logical demonstration of the value of electricity in coal mining this article attempts the explanation of the advantages of the electric drive for all classes of coal-mining machinery. Typical examples are given of the application of motors, the use of both alternating-current and direct-current generators, motor-generator sets and rotary converters.

Power is required in the production of coal, primarily for undercutting, ventilating, transporting, hoisting, pumping, signaling, and the operation of the tipple and other outside machinery. In the electrically operated mine or group of mines, all the machinery may be served from a single power plant. No other general field of power usage imposes upon the electric generator the severity of conditions inseparable from mining service. Nothing can be more trying, for example, than the common instance of a generator supplying power for the operation of mine locomotives. This work calls for instant and frequent changes from no load to full load and usually to a considerable overload. The requirements for a generator that will give satisfactory results in mining service is a capacity for endurance of heavy loads suddenly applied, as well as large overloads applied with equal suddenness and continuing for long periods of time.

The voltages in use range from 220 to 500 volts, for all direct-current installations underground and on the surface. Generators are as a rule compound wound, as it is desirable to have the voltages at the machines increase with a heavy load, so as to keep the potential constant at distant points in the mines. The standard practice in operating two or more direct-current generators is to connect them in parallel. When thus connected, electric generators should be of the same design and construction, and should possess the same or as nearly as possible the same characteristics in order to secure the best results.

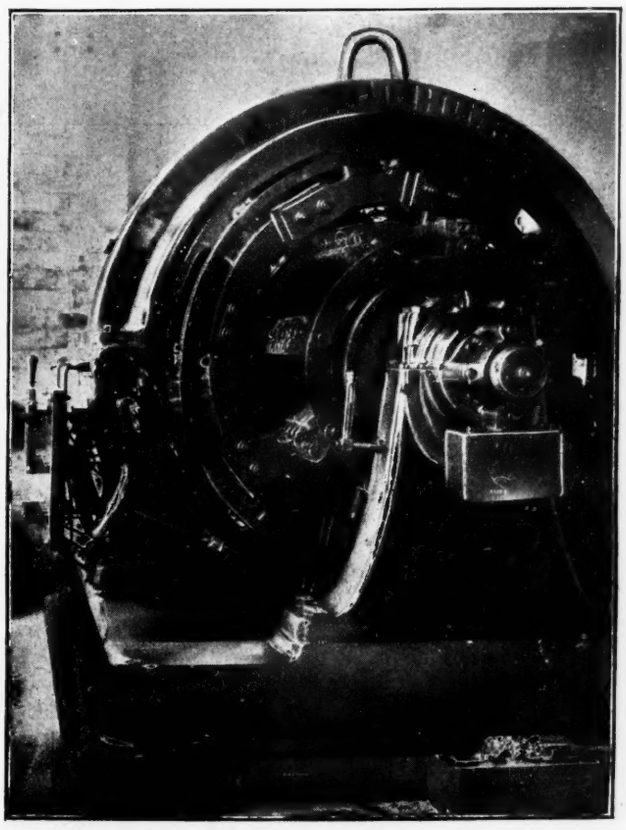
The coal-mine operator in the past few years in many instances has come to regard the purchase of central station power as a more satisfactory and economical means of operating his mines than its generation. This removes the worry and care of a power plant, is the means of lower cost of operation and secures greater reliability. This means greater production while increased power can be obtained quickly at a small initial cost. The average coal-mine operator formerly believed that the power produced at his power plant was at a fairly low cost, because of cheap fuel, simple apparatus, cheap labor and the low cost of completed buildings.

The cost of fuel is of course low at the mine, but its value should be figured at the price that could be obtained for it if sold. The water-supply question is often a serious one. Some of the early plants were compelled to have all the water for use in the boilers and elsewhere transported a considerable distance by rail. Again, the water that is found at the mines is often so bad that it causes corrosion, pitting, foaming or scale in the boilers. In many cases this occasions heavy repairs and results in accidents and shutdowns.

The boilers, engines and generators as a rule are the simplest and cheapest obtainable. In many of the early plants at the mines the first cost of a piece of machinery was the only item considered, there being little incentive for high economy at such a power plant. Low cost and reliability are the first requisites, and with the class of unskilled help generally found about the mine reliability can be obtained only with the simplest kind of apparatus.

With the use of "central station power" the old power house is either removed or converted into a substation. The steam engines are replaced by large synchronous motors and belted to the old generators. The old switchboards are used as before, with the addition of new panels to handle the alternating-current motors and other circuits.

The rotary converter is the most popular means of converting the alternating to direct current. Its use in connection with central station power has been found

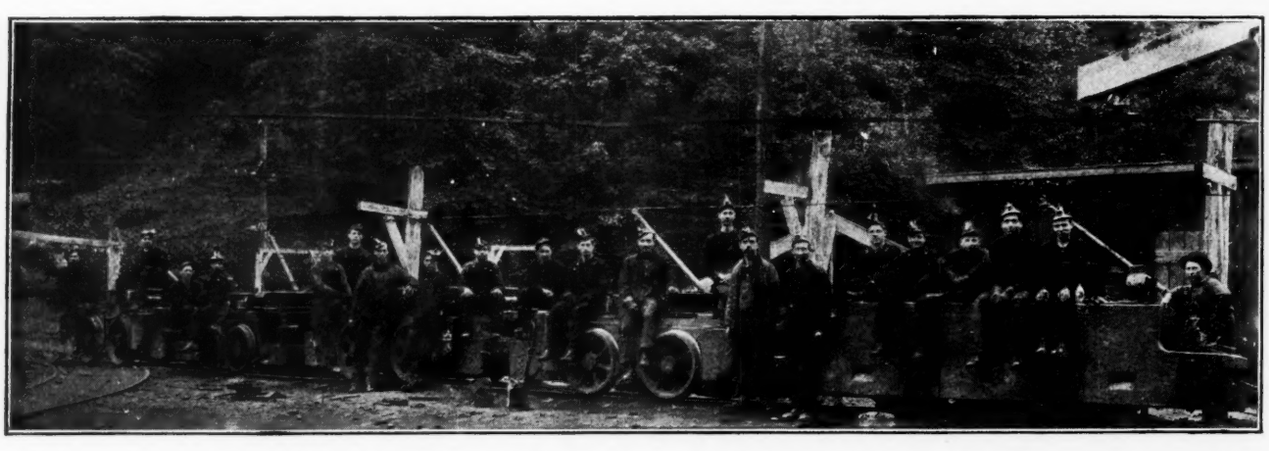


ROTARY CONVERTER IN A MINE SUBSTATION

to have certain disadvantages that are overcome to a certain extent by the employment of a motor-generator set. As a rule the local conditions are taken into consideration in determining which is the better for the purpose.

The motor-generator set has a decided advantage over the rotary converter in special cases, since there is no electrical connection between the two elements, and independent voltage adjustment over a wide range is possible. Regulation is not greatly affected by the fluctuations of the supply current. The ratio of the direct-current voltage to that of the alternating current in a rotary converter is practically a fixed quantity. This is a serious disadvantage where it is desirable to have the direct current potential increase with the load so as to keep it constant at some distant point. Adjusting the field rheostat or strength of the fields of a rotary converter changes the phase of the current. A lagging alternating current passing through an inductive circuit causes a decrease in the voltage, while a leading current causes a rise.

The superiority of the electric locomotive for mine haulage has caused it to supplant almost all other means



HAULAGE AND GATHERING LOCOMOTIVES AT THE MOUTH OF THE MINE

of transporting coal inside the mines. This is largely due to the fact that in addition to its high efficiency, mechanical strength, dependability and simplicity of control, it is the most compact form of tractor available. This last characteristic is of the utmost importance in underground operations where the available headroom is usually limited.

The electric locomotive for mining service is built in various types and sizes. Four general forms are now commonly used. The standard and the most practical as well as the most successful drive is the friction, or electric traction locomotive. This type of machine can be used on good tracks with grades up to 5 per cent. and at times on even greater inclinations. The gathering locomotive is practically the same style of machine, being equipped with either a cable reel or an auxiliary motor, drum and cable. The rack-rail drive is used for heavy pitches met with in some mines. One combination locomotive is a rack-rail and friction drive machine. This type finds application where the track is both ordinary and steep, these conditions being encountered in some hilly mines.

For the main haulage in mines the mule or horse has been almost universally discarded where electric service can be obtained, inasmuch as a single locomotive can effectively displace a considerable number of animals, can travel faster, requires less headroom and can operate 24 hours a day. For gathering, however, animals are still used to some extent.

The standard mine locomotive motor equipment consists of two direct-current units, each connected to a driving axle through a single reduction gear. Three motors are sometimes used with three pairs of driving axles and wheels. It is only in exceptional cases, where the generating and auxiliary motor equipment of a mine is all built for alternating current, and a heavy investment would be required for rotary converters or motor-generator sets, that locomotives utilizing polyphase induction motors can be adopted with success. The necessary speed control would then be secured by a variable external resistance connected in the rotor circuit.

Owing to the high speeds characteristic of this type of motor it is necessary to interpose double reduction gearing in order to obtain the running speeds that are safe for mining service. Two overhead trolleys or a double trolley are also required. Bonded rails may be used for the third conductor. The electric locomotive is a much more flexible system of transportation and more convenient than the rope haul. Electric locomotives are made in many various types and sizes, so that it is possible to find a machine that will operate and give satisfactory results and service in any mine or under any ordinary conditions.

For haulage in slope mines or in drift or shaft mines where the different levels are connected by slopes of considerable length, the locomotive cannot be used, and recourse is had to various forms of rope haulage with permanent hoisting drums located either on the surface or in underground chambers. Due to its rotary motion and high torque characteristics, the electric motor affords an ideal method of applying power to hoists. For this purpose, either direct- or alternating-current motors have numerous advantages as compared with steam and air systems.

The intermittent service of hoists involves a necessity for certain precautions in running and resuming the operation of steam hoists after they have been shut down, which are entirely absent when the electric type

is used. The motor-driven hoist is the simplest and most compact form, inasmuch as the motor to drive it can usually be mounted on a common base with the hoisting drum and arranged to drive it directly or through gears, thereby forming an entirely self-contained unit and effecting an economy in weight and in the amount of space required for its installation. This is often of appreciable importance when hoists are placed within the mine. Owing to the superior speed control of the electric motor it has great flexibility in operation, while its simplicity minimizes the amount of repairs and obviates the necessity for the services of an experienced engineer to run it.

The relative importance of the pumping equipment in different coal mines is dependent upon the geological conditions encountered. In many mines the service required constitutes a comparatively negligible demand on the power station. On the other hand, a large percentage of the mines situated below local water levels are absolutely dependent for continuous operation on the efficiency of their pumps.

As in the applications already referred to, the electrical operation of pumps renders possible economies and efficiencies otherwise unobtainable, and the benefits derived as compared with either steam or air power service increase in direct proportion to the diversity of the applications and the distances over which power has to be transmitted.

The problem of the main pumping units in coal mines is simplified by the recent improvement in the efficiencies of multi-stage centrifugal pumps. These were formerly only applicable to comparatively low head service, but are now successfully delivering water from sumps located more than 1000 ft. below the surface. The high speeds which are characteristic alike of the electric motor and the centrifugal pump render it a simple matter to design an effective combined unit.

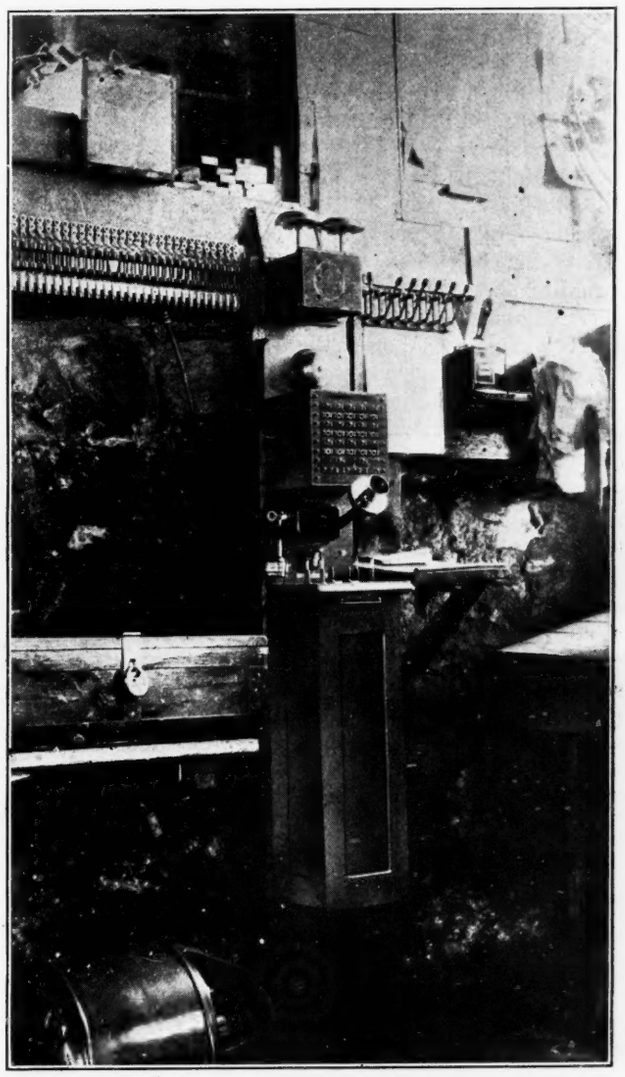
Existing pumps, originally designed for steam operation, are sometimes changed to motor drive. This reduces the amount of power required and the expense of attendance necessary, since such machines can be safely made automatic in operation, if desired. Where motors are geared to reciprocating pumps their use insures the direct application of a larger percentage of the initial power developed than where other methods are employed. Both alternating- and direct-current motors are readily adapted to all forms of pumps, the type of motor selected depending upon the service required and the character of the electrical energy available.

The adoption of the centrifugal type of pump in coal mines is due not only to the improved efficiencies of the modern multi-stage form, but also to the ability of the centrifugal type to handle liquids containing a considerable percentage of solid matter in suspension more successfully than can reciprocating pumps.

A good demonstration of the superior flexibility of electrical operation in coal mines is found in the installation of a portable pumping set. This can be lowered down the shaft or slope, rapidly hauled to any portion of the mine by the electric locomotive and immediately put into service by connecting the suction pipe, unreeling the discharge hose and connecting the motor to the feeder wires.

Uninterrupted service is the primary requisite of a coal-mine ventilation system. The imminence of the hazard to workers underground involved in a failure of the supply of fresh air is of course dependent on the character and formation of the mine. Mechanical ventilation by means of rotary blower or exhaust fans which give a positive and fully controllable supply of air is almost universal in coal mines.

In driving ventilating fans with electric motors the reliability of the service is increased. Mine fans are normally placed only at the mine openings, but in some



SMALL MINE TELEPHONE SWITCHBOARD

mines booster fans are used along the entries or in the air courses. The centrifugal type of fan is the one in almost universal use as a main unit, and as the name implies it is built with the blades parallel to the shaft and forcing the air out at right angles to it. The disk type of fan with radial blades set at an angle to the shaft is used mostly for booster or inside work.

The electric undercutting machine has undoubtedly lowered the cost and increased the production of coal. Approximately 40 per cent. of the production in the United States is mined by machinery. Since the introduction of mechanical coal cutters the use of the electric motor-driven type has increased steadily and more rapidly than other forms, owing to the superior flexi-

bility and economy of the electrical distribution and application of power. The typical modern coal cutter is mounted on a self-propelled truck and all its movements in loading upon or unloading from the truck, and during the process of mining, are made under its own power without hand labor.

In up-to-date mines the holes for explosives employed in blasting the coal down are drilled quickly and economically by the use of portable electric rotary drills. The electric rotary drill is a powerful, serviceable and thoroughly efficient machine for use in coal. Blasting by electric detonation is the most effective and economical system. It surpasses all others in safety and certainty, as well as in results that are accomplished. Electric blasting makes it possible to fire several charges simultaneously.

Signaling service in mining work must be absolutely reliable, in the face of the most adverse conditions. For this purpose primary batteries are used to some extent in connection with bells and relays. Block signaling systems employing electric lights as the warning medium are used in mines employing several locomotives hauling coal from the same section.

A reliable telephone system in a coal mine and around the outside works is an important item. The saving in time and money which such a system effects by reliably transmitting routine orders or when there is a temporary suspension of power, a shutdown of some part of the plant, an accident, or an emergency affecting both life and property, justifies many times over the investment required.

Mine telephones and systems usually consist of several instruments connected to one pair of wires, forming a party line. Local battery magneto telephones are used and signaling is done by a code of rings. The severe conditions encountered underground, due to moisture, gases, acidulous water, etc., make it necessary to provide instruments unusually well protected for this service.

Mining is rough, hard work, and mining apparatus must be exceptionally strong and rugged to stand the strain. Especially is this true of the storage battery for use in mines. The use of the storage-battery locomotive is becoming more widespread of late, with the recent improvements and development of various types of such batteries.

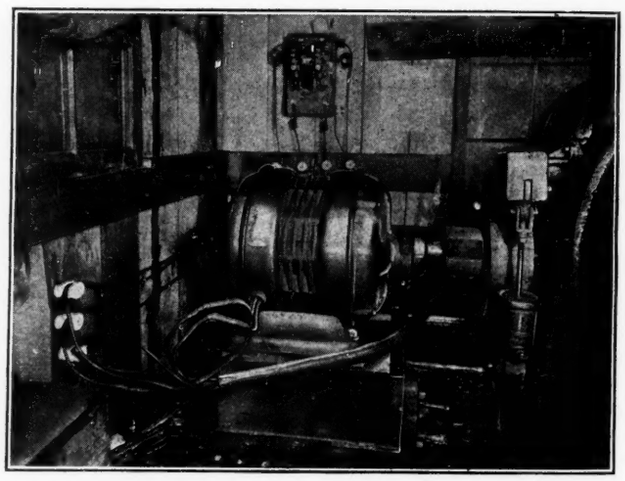
Electric safety miners' lamps are increasing in popularity every day. The greatest danger in mines today is the use of open lights. Artificial light of some sort is necessary, and much ingenuity has been shown in trying to adapt portable electric lamps to this work. Incandescent lamps are used for lighting all important places inside the mines as well as all buildings on the surface. The use of colored lamps to denote dangerous places and safety manholes, signals, signs, etc., is almost universal in the coal mines today. The electric arc lamp and the flaming arc lamp are used to some extent for illuminating large areas of ground or buildings on the surface.

The trolley wires underground are generally supported by special hangers directly from the mine roof, or timbers, except where the height or the unevenness of the roof make it necessary to attach the suspension to a length of pipe fastened either to the roof or the side walls. A suitable insulation is incorporated in the construction of the special trolley-wire hangers so as to prevent leakage of current.

All feeder lines and wiring are installed on porcelain or glass insulators. The locomotives and all motors working underground on direct-current power utilize the track as a return circuit. The rails on the main haulage roads are bonded with a short flexible bond of copper wire compressed into holes that are drilled close to the ends of the rails.

With the advent of the central station power at the mines, the use of alternating-current motors for all classes of drives has increased, both underground and on the surface. Alternating-current power has some speicfic advantages over direct current. It is more flexible in comparison. With direct current only one voltage is available and that is the one that is generated. With alternating-current it is possible to have as many different voltages as desired by the use of suitable transformers, regardless of what the voltage generated may be.

The induction motor, of the constant-speed squirrel-cage type, is used wherever possible. Its advantages



ALTERNATING CURRENT MOTOR DRIVING A SMALL HOIST

over the direct-current machine are numerous. It is the simplest kind of an electric motor and will stand more abuse and give satisfactory service with less attention than any other type. With the elimination of the commutator and brushes the fire hazard and safety conditions are greatly improved.

For tipple service and for box-car loader drives either alternating- or direct-current motors may be used. In the direct-current installations the use of compound-wound motors is the accepted rule in almost all cases. The constant-speed type of induction motor is used extensively for operating picking tables, drags, conveyors, shaking screens, etc. In fact they are the universal drive for all machinery and apparatus that requires practically a constant and uniform speed. The variable-speed wound-rotor type of alternating-current motor is used for drives that require excessive starting torque and that are subject to stops and sudden reversals.

In general electric motors afford the most satisfactory form of power for driving machinery of all classes. This superiority is due to several causes, among them being the following: The economy with which electric

energy can be generated in large central stations, transmitted over wide extents of territory and delivered to the most remote user in a form suitable for his purpose; the high operating efficiency of electric apparatus; an electric motor is one of the most efficient of energy transforming devices while operating, and the instant it stops all expense for power ceases; the ease and certainty of control and the small amount of attention required.

The control of an electric motor is the acme of simplicity and can be effected by almost anyone. In fact the operator need not be near the motor he controls, but can start and stop it from a distant point. Furthermore, in many instances an automatic controller can be arranged, thereby making the starting and stopping automatic and dependent upon current conditions and the work to be performed.

Who's Who In Coal Mining

James Brown Neale

James B. Neale, the Fuel Administration Production Manager, is a man whom the war surprised. He was not extensively known before he was appointed to his present office. He was one of the men who were, and even still are, practicing in a narrow sphere a work which could be expanded into one of national scope and importance if the opportunity were offered. The workers of the Buck Run Coal Co. and the Darkwater Coal Co. near Minersville, Penn., watched Mr. Neale around the breaker and down in the mine dressed in his mining clothes and they little thought of him as the man who would later be production manager for the United States.

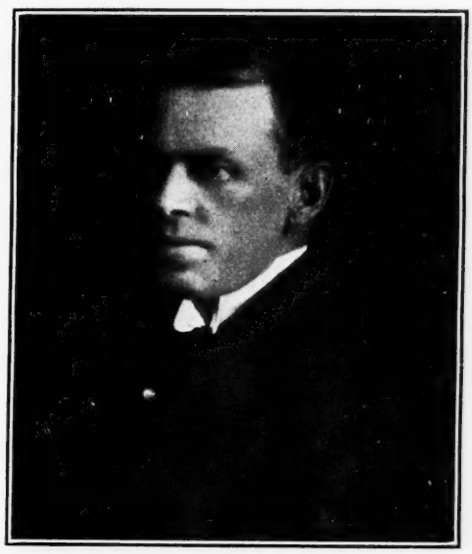
An energetic man, he lived at his work and stayed by it night and day. The advice he gave to the West Virginia operators to stay "close to the game" (he did not use those words exactly) was the advice he followed himself as an operator in so far as that was physically possible, for he had general charge, as president, of not only the Buck Run and Darkwater operations in the anthracite region, but over the Sonman Shaft, near Johnstown in Cambria County, Pennsylvania, and over the Canmore mine, in far-away Calgary, British Columbia.

James B. Neale was born on Oct. 4, 1872, in the town of Kittanning, Penn., a few miles north of Pittsburgh on the Allegheny River. His father was Alonzo Potter Neale and his mother Martha Elizabeth Colwell. He was educated at Yale and received his A.B. degree in 1896, being admitted later to the bar. In due time Mr. Neale became a member of the coal firm of Thorne, Neale & Co.

Mr. Neale has, at no time, been robust, yet there is in him that spirit which drives him along unceasingly despite the weakness of the physical framework which holds it. The bedplate of his engine is somewhat too light for the large diameter cylinders and high-pressure steam which shock and jar it, but it nevertheless has, so far, contrived to hold its own. Buck Run and Darkwater collieries in the steeply dipping folds of the southern anthracite field are not quick-yielding or easily mined propositions. When in 1903 the Buck Run Coal Co. opened the Buck Run mine, every mining man in the valley predicted for it a short life. But their fears were groundless as the present going colliery will show. Darkwater had been abandoned, but Mr. Neale's company reopened it and it is running successfully today.

At Buck Run Mr. Neale erected a fine clubhouse and a beautiful school building. When the fire of a year ago destroyed the breaker, it ruined also a fine washhouse and convenient first-aid quarters. At Buck Run a trained nurse is provided for the sick and injured residents of the village. The miners' homes are small and the wild nature of the surroundings prevents gardening, but these disadvantages are more than offset by the recreational opportunities provided. A saving fund has long been a feature at this colliery, the money being kept as in a bank subject to the depositor's call.

Mr. Neale asked no more in West Virginia than he has provided for his own men in Pennsylvania. But he



JAMES B. NEALE

knows as well as any man that "plans of mice and men gang aft agley" and that no matter what is done to solve the labor problem there will be some labor troubles to make mining difficult. When he was touring West Virginia, the men he had served so well at Buck Run, mostly Lithuanians, a class of men always ready for any trouble presenting itself, went out on strike with the other mine workers in the southern field.

The production of coal is often not so much a technical problem as a moral issue. In war, coal supplies the army, the navy and the nation; in peace, it is the motive power from which come our comforts and our sustenance. Who shall say that the filling of such an important part of the national and world needs as is the supplying of coal is not a duty preëminent among the many we owe to our neighbor? Only a man of Neale's temperament and qualities could have achieved the great work which he has done to sustain and increase tonnage or could have given to the great army of coal mine workers and operators their wonderful morale during the continuance of that struggle which appears to have just reached its close.

Research and Progress in Byproduct Coking in Great Britain—II

By J. B. C. KERSHAW
Colwyn Bay, Liverpool, England

SYPNOSIS—*Coal tar is an extremely useful and interesting substance. Its distillation into various substances such as naphtha, creosote, anthracene, etc., is a process presenting many possibilities for improvement. At present the intermittent process is mostly employed, but continuous distillation would yield many advantages.*

IN THE PAST large quantities of the crude or raw tar produced in byproduct coke ovens have been used in England for road-making, while in America it has been employed as a substitute for solid or liquid fuel in metallurgical operations; but this can hardly be considered a satisfactory or scientific method of disposing of this valuable byproduct of the coking industry. Distillation, for the purpose of recovering some or all of the various constituents that form the base materials of several important branch manufactures, is therefore now regarded not only as the more patriotic, but as the more profitable course to follow with regard to this product.

The explosive, aniline dye, synthetic drug and perfume industries are all based on substances derived from tar; and although the popular idea that the beautiful colors manufactured from tar are already really contained in this material as it leaves the gas or coke works where it is first produced is quite erroneous, it is nevertheless true that without cheap and adequate supplies of tar to provide the base materials—benzol, toluol and anthracene—the dyeing and explosive industries could never have attained their present development in Germany, England and America.

Tar Most Remarkable Compound Known

In 1897 Germany obtained only 52,000 tons of the tar she required to support her color industry from coke-ovens, whereas ten years later, in 1907, she obtained 632,400 tons per annum from this source and another 300,000 tons from gas works. The tremendous expansion of the byproduct coking industry in Germany during the next decade—the ten years 1908-1917—of course explains why she is now practically independent of the rest of the world as regards supplies of benzol for her great explosive and color works.

Tar is regarded by the general public as a nasty black viscous substance, with an evil odor and a reputation for spoiling children's clothes. To the chemist it is one of the most remarkable compounds known, being a mixture of hydrocarbons, both aromatic and paraffinoid, with certain oxygen- and sulphur-containing compounds of acid character, also some nitrogenous compounds with basic properties. The fact that tar contains comparatively large quantities of benzol and anthracene, two important organic bodies, with the carbon "ring structure," explains why tar is such an important material for the synthetic drug and color industries. Nearly all these valuable derivatives are based on the benzene "ring" discovered by Kekulé in 1865. It was this discovery, and the preliminary work required to establish the ring theory of structure for these higher hydrocarbons, which led to the rapid development of the color industry in Germany, rather than in England or France.

The composition of coal tar is so varied that no one analysis can be accepted as representative, but as a rule its specific gravity varies from 1.1 to 1.2, and the higher the temperature used in coking the greater the percentage of anthracene and pitch. The character of the coal used, the shape of the ovens or retorts, the compression used in charging them and the temperature of carbonization all have some influence upon the character and composition of the tar.

Tar Should Be Kept Free from Contamination

It is important that before the tar is subjected to distillation it should be freed from the ammonia water that has collected or condensed with it. This separation of water from the tar by settling, however, is sometimes hindered by the presence or the tar oils, used for extracting toluol and benzol from the gas, since these oils produce an emulsion with the water and tar. In order to obtain a good separation it is necessary, therefore, to make certain that no tar oil from the benzol-recovery plant has been allowed to contaminate the tar.

If the tar is intended merely for road-making uses, the products that are removed by distillation are ammonia liquor, benzol, toluol, solvent naphtha and carbolic acid; the heavy creosote oils and anthracene oils being left. The tar distillation plants that have been erected at many English gas works in recent years are for this purpose, and the tar produced is sold to meet the road board's specifications for "road tar."

The tar prepared under this scheme would probably be classed in America as "soft pitch." It leaves the still at 260 deg. C. in the fluid state, and passes through a "heat interchanger," in which it gives up some portion of its surplus heat to the inflowing cold tar. The aqueous vapor and light oils driven off during the distillation are also first condensed in a cast-iron coil immersed in cold tar, so that here again some heat is saved and returned to the still with the fresh charge.

The amount of water and light oils obtained from one ton of tar by this process is usually 30 gal. The chief advantage of this method of tar treatment is that it recovers the ammonia and phenols, and provides an outlet for the pitch, which forms 50 per cent. of the total weight of tar distilled in all tar works and is often a difficult byproduct to dispose of. The disadvantages are that the heavy tar oils and the anthracene are also left in the final product, and that these constituents are sometimes more valuable than those recovered.

Each case must be studied therefore in the light of

local conditions. In this connection the following figures from an article by E. B. Wilson in *Coal Age* for Feb. 10, 1917, are of interest. The prices upon which the estimate is based will of course now require revision, for in most cases they have advanced during the past eighteen months.

YIELD AND VALUE OF BYPRODUCTS FROM A CONTINUOUS TAR-DISTILLATION PLANT, USING 10,000 GAL. OR 42 TONS OF TAR PER DAY

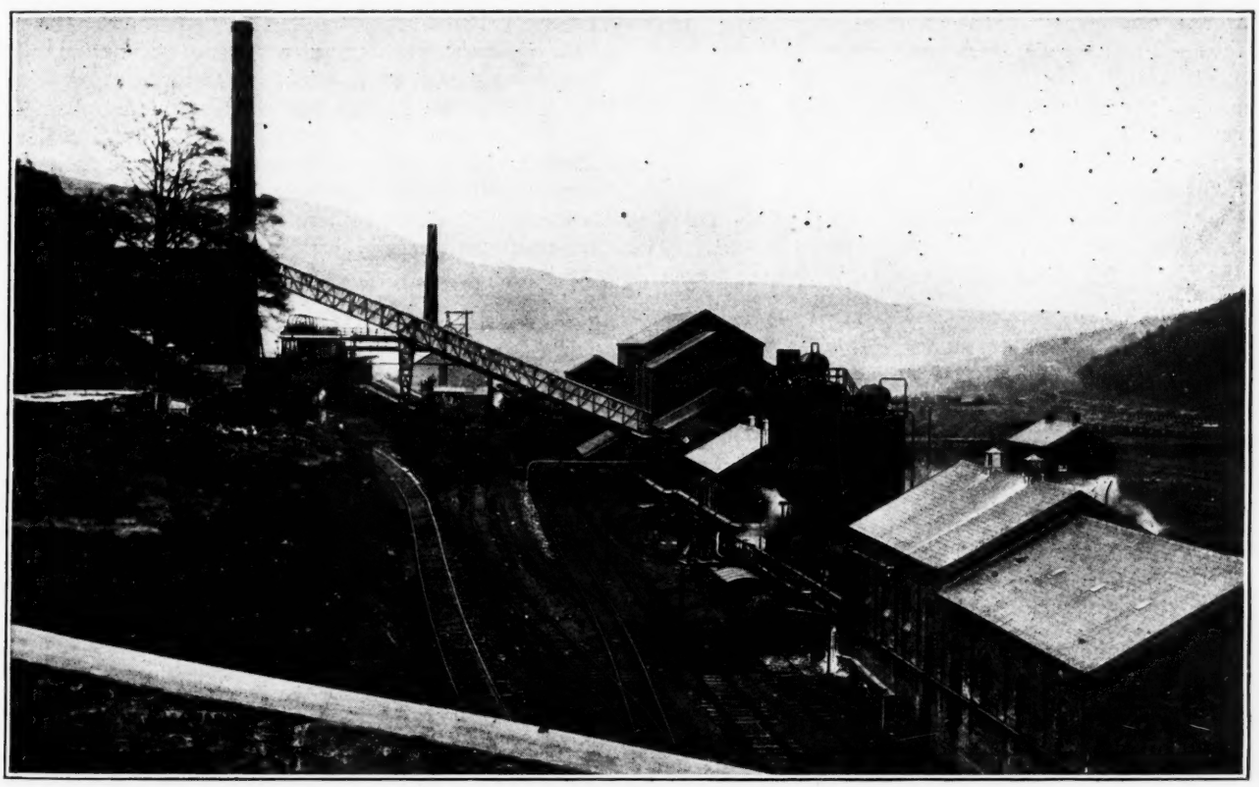
	Yield, Gal.	Value
Ammonia liquor (3 per cent.)	273	$8.01
Naphtha	117½	11.76
Light oil	994	94.40
Creosote oil	1772	86.10
Anthracite oil	726½	36.33
Pitch	5500	330.00
Total	9333	$566.60

Since the cost of distilling 10,000 gal., or 42 tons, of tar was only 28c. per ton, equal to $11.76, the receipts work out at $554.84 as compared with $300 if the tar had been sold. A much larger profit would of course be obtained if the crude products named above were still solid it is difficult to handle, and its dust causes a dangerous disease known as "pitch cancer" among the workers.

According to Butler (*Journal Society of Chemical Industry*, Jan. 31, 1918) one of the best methods of handling pitch from tar stills is to run it while still hot and fluid into pans holding half a ton. It is here allowed to cool and set. When cold, by means of a crane the pan and its contents are swung over a railway car and tipped, the whole block of pitch being thus moved from the still to the railway car without any handling.

As regards the treatment of the light-oil fraction, the latest English practice is to wash the oils with dilute caustic soda. This chemical combines with the tar acids to form phenolates and other salts, and on treating the solutions of these with CO_2 the carbolic and other free tar acids separate from the solution of sodium carbonate, which is formed as a result of the reaction.

The larger portion of the light-oil fraction, however, is unacted on by caustic soda and contains the benzene,



GENERAL VIEW OF AN ENGLISH BYPRODUCT RECOVERY PLANT

further refined before sale. This would, however, demand a much larger plant and an expert staff of engineers and chemists to manage it.

English Practice in Tar Distillation

If it be decided that recovery of the byproducts is desirable, the tar by the first distillation may be separated into the following fractions: (1) Below 150 deg. C., ammonia liquor; (2) 150 to 170 deg. C., light oil; (3) 170 to 230 deg. C., middle or carbolic oil; (4) 230 to 270 deg. C., heavy or creosote oil; (5) 270 to 400 deg. C., anthracene oil.

The pitch which remains in the still at the end of the distillation amounts to between 50 and 60 per cent. of the tar used. Its disposal, as already pointed out, is one of the problems of tar distillation. When cold and toluene, xylene and solvent naphtha. All of these are highly valuable byproducts at the present time. These are separated one from the other by further distillation, after a preliminary treatment of the light-oil fraction with concentrated sulphuric acid, in order to remove the unsaturated hydrocarbons and sulphur compounds, which are impurities that would hinder the success of the fractionating process.

The middle oils which distill between 170 and 230 deg. C. consist chiefly of carbolic oils and naphthalene, and on standing some time the latter separates out in crystalline form. The mother liquor from these crystals contains 30 to 40 per cent. carbolic acid, which is recovered by treatment of the oil with caustic soda and CO_2 as described above.

The creosote oils which come over between 230 and

270 deg. C. deposit naphthalene in a crystalline form on cooling and after separating the crystals by centrifugal action these oils are ready for use either as a wood preservative or as a liquid fuel. Naphthalene is purified by washing with sulphuric acid and caustic soda, and is then either redistilled or sublimed in order to obtain a pure marketable product.

Anthracene is separated from the heavy anthracene oil by cooling in vessels provided with mechanical agitation. The greenish crystals are separated from the oily mother liquor in a filter press, and are then passed through a centrifugal machine to remove the last traces of the liquid oil. By treating the crystals in a steam-heated hydraulic press under a pressure of 200 to 300 atmospheres (2940 to 4410 lb. per sq.in.), the bulk of the impurities of the crude anthracene flow away in the liquid form, while the balance can be removed by washing the crystals that remain with solvent naphtha and pyridine. The products of these operations is a 90 per cent. anthracene, which is employed in the color works to produce "alizarene," the base of many important red and purple dyes.

The form of still used for tar distillation is usually a pot still, of 10 to 20 tons capacity, with a dished or concave bottom. In large tar works these stills are arranged in rows of five or ten. In order to economize heat a "preheater" is attached to each still, and in this vessel the vapors proceeding from the still are made use of to heat the incoming charge of tar, while in some cases the pitch as it flows out is also employed for the same purpose.

Satisfactory Type of Still Not Yet Evolved

Many continuous forms of still have been patented and tried, but so far no one type has been generally adopted and the old form of pot still is still used in the majority of tar works. The advantages of continuous distillation, both as regards economy of heat and working expenses are so great, however, it is reasonable to believe that in time all difficulties will be surmounted, and that a satisfactory type of continuous tar-distillation still will be evolved.

A paper read before the American Iron and Steel Institute in 1916, by W. H. Childs, contained a large amount of information upon American methods of working up coal tar. The author stated that in the United States the horizontal type of still was more common than the vertical type favored by European tar distillers. As regards continuous stills, encouraging results had been obtained both in Europe and America, and further experience would no doubt improve the design and operation of this type of apparatus.

Steam or air agitation was generally used in the United States in conjunction, at times, with reduced pressure. In running the still to pitch, five fractions were generally taken—that is, light oil or crude naphtha, carbolic or middle-oil, heavy or creosote oil, anthracene oil and pitch.

As regarded the latter product, American tar distillers had gone in advance of European distillers in producing soft and medium pitches suitable for a great variety of purposes, and large sums of money had been expended upon technical application and the education of the public in the use of these soft and medium pitches for roofing, road-making and similar purposes.

Finally, an American patent for a continuous type of tar still may be referred to. This was granted to R. P. Parry in March, 1916, and is numbered 1,175,079. In this case the tar is fed continuously as a thin film onto a rotating drum or surface, which is kept moving at a uniform rate and is heated to 537 deg. C. (1000 deg. F.). The speed of rotation and the heat applied must be sufficient to drive off all the volatile constituents of the tar, and to convert the residue into pitch coke, which is then automatically removed from the drum as it completes each revolution. A similar device, working under a partial vacuum, has been employed for the preliminary dehydration of tar before distillation. In this case, however, a much lower temperature suffices to drive off the water and highly volatile oils.

(To be continued)

Coal Production in France Since 1913

The production of mineral fuel, including lignite, in France in 1913, was 40,843,618 tons. During the first months of the war, owing to German occupation, all of the Valenciennes basin and the greater part of that of the Pas-de-Calais, with a normal output of about 22,500,000 tons, or more than half of the total coal production of France, were eliminated from the native coal supply. Moreover, the collieries in active operation lost a large part of the miners through mobilization. The production, therefore, during the second six months of 1914 was greatly reduced, and the output in January, 1915, was only 1,532,000 metric tons. The production slowly but gradually increased during 1915 and 1916, reaching 1,676,000 tons in January, 1916, and 1,861,000 tons in December of the same year. The progress was more marked in 1917. The maximum monthly production was reached in October, the output being 2,783,000 metric tons, nearly the normal monthly production before the war. The estimated total French coal production during the past year was nearly 29,000,000 metric tons, or more than 9,000,000 metric tons greater than in 1916.

Normally the annual production of French coal is about 40,000,000 metric tons, and the annual consumption 60,000,000 metric tons, the shortage of 20,000,000 metric tons being made up by the importation of foreign coal. During 1917 there was 17,333,156 tons of coal fuel imported, including briquets and coke, which, with the native production of 28,930,000 metric tons, made the total coal supply of France for the year 46,263,156 metric tons. But owing to the increased activity shown in many branches of French trade during the past year, there was an increased consumption of fuel and the demand was greater than the supply.

Of the imports of coal fuel in 1917, Great Britain shipped 15,848,734 metric tons of coal, 662,662 tons of coke, and 753,772 tons of briquets; and the United States 57,136 tons of coal. The receipts of American coal would have been much larger had the shippers not been handicapped by the prohibitive freight rates which prevailed, owing to the scarcity of available tonnage.

The consumption of coal in France for household and industrial purposes is regulated by statute, preference being given in the allotments to establishments working for the national defense.—*Commerce Reports.*

Hazards and Safeguards in Anthracite Breakers and Washeries*

By D. K. GLOVER
Safety Engineer, Lehigh Coal and Navigation Co., Lansford, Penn.

PERHAPS the most logical method of covering the hazards encountered in preparing coal for market is to follow the flow of the coal through the breaker. At the dump, as the coal leaves the mine car, the hazards are from flying pieces of coal or rock and cars jumping the dump, resulting in injury to the men engaged in removing the latches of the car door. Injuries from flying material can be prevented by inclosing the dump at the sides and top. The jumping of cars is possible on certain styles of dumps, particularly on the old balance or gravity dump. Where this style of dump is used, timber framework should be placed to check the car but not so as to interfere with the dumping. On the Greene dump, the rotary dump, the self-dumping cage and steam dump there is only a remote possibility, if any, of accidents from this cause. On old-style dumps, where wooden cars with end latches were used, it was customary to have a man knock off the latches with a sledge hammer while the car was being dumped; with the rotary dump this is entirely eliminated. On the Greene dump the latch can be loosened while the car is moving slowly; at the steam dump the car latch is partly opened while the car is at rest, and the final opening is made by blocks set at the sides of the dump. Where the self-dumping cage is used, with a steel car equipped with a sliding ring on a horn, it is necessary to pull the ring by hand. In order to safeguard the man performing this duty, he is placed on a platform high enough so that no material from the car can possibly strike him. He is also provided with an iron rod, 8 ft. long, with a U-shaped prong large enough to pass over the horn but not over the ring; and as he stands at an angle of about 45 deg. with the direction of the flowing material he is out of all danger.

Safeguards Protect Platform Men

If the coal is not checked as it flows down the dump chute there is a possibility of it having sufficient velocity to pass over the shakers and strike the platform men. To obviate this two forms of checks have been devised, both of which work very satisfactorily; one is a suspended gate nearly the width of the dump chute, about 4 ft. high, made of 3-in. oak covered with ¼-in. sheet iron. This gate is forced open by the weight of the material resting against the upper side, thus allowing the material to flow under. The other is the slowly revolving feed, which is the width of the dump chute, and consists of four paddles about 18 in. high set at right angles to one another. While this feed is not primarily a safeguard, it acts in that manner on many occasions. To eliminate the possibility of large lumps bounding over the feed and striking the workmen on the picking platform, second-hand 40-lb. T-rails are strung across the top of the platform, these being raised about 2 ft. above the floor to allow ordinary lumps to pass under.

On the first platform, where the class of material handled is large and rough, the possibility of a man injuring himself by straining is eliminated by arranging that he stand so that his waistline is at the level of the platform. To safeguard him from cutting his fingers while pushing rock off into the rock chute, he is provided with either leather mitts or hand leathers; to protect his fingers from pinching when starting a jam, he uses a two-pronged hook.

Leather Gloves Save the Fingers

On the second platform the material handled is finer than at the first platform, as it has already passed through the shakers; the only possibility of accident is the cutting of fingers on sharp edges, and this is eliminated through the use of leather gloves. The chutes are protected near the rolls on which the coal passes, so that in the event of a man carelessly stepping into a chute he cannot slide down to the rolls. The rolls are entirely covered, with the exception of the covered chutes leading into the rolls and the chute under the rolls, thus preventing anyone from accidentally stepping into or falling into rolls and eliminating accidents from flying pieces.

As the rock passes to the rock pocket, the chutes are built with sides high enough to prevent flying pieces striking employees. When the rock is loaded out of the chute, accidents to loaders, who in times past stood in front of the chutes to pull the lever operating the gate, are prevented by the installation of steam rock gates, operated from a platform above; the operator is in an absolutely safe place and performs his work without straining.

The coal, on leaving the main rolls, is again passed over sets of shakers and sized before passing to the jigs. Accidents around shakers usually occur at the shaker shafts while men are oiling. If a railing 42 in. high, with four removable pipe sections, is constructed in the rear of the shaker shaft and the cam straps are provided with grease cups, there is not much chance for an oiler to be caught. Several fatal accidents, in which the victims were wrapped around the shaker shafts, have come under my observation—all due to removal of railings by thoughtless oilers.

At jigs, the hazards consist of being caught around jig shafts, or, in some types, coming in contact with sprockets and chains on the elevators. The first hazard is readily removed by covering the jig shaft, leaving the cams and straps exposed, with the grease cup placed on top of the cam strap; the second, by a guard over the sprocket wheel and chain.

During repairs of the jigs, when it is necessary for men to work inside, there is small possibility of accident, as the repairs are usually made at night when no material is passing through the breaker; or, if extensive re-

*Paper read at the seventh annual congress of the National Safety Council, St. Louis, Mo., September, 1918.

pairs are necessary, the flow of water and material can be diverted without great difficulty.

In the loading pockets, to which the coal passes from the jigs, the only hazard present is when, under extraordinary conditions, the pockets become blocked. It is necessary for a workman to start the coal, and he may be drawn down with the flowing coal and buried. This hazard is safeguarded by the use of a safety belt or by the construction of a walk on one side of the pocket. Another possibility that occurs to me is that of a workman accidentally falling into the pockets. However where a substantial railing of standard height is maintained there is not much danger of such an accident.

The running of cars under the breaker for loading presents several hazards; one is the danger of a car runner being knocked off the car by the lip of the chute. As it is contrary to good principles of operation to have chutes very high above the cars, on account of breakage, and the fact that there is so much variation in the height of standard-gage coal cars, necessitating a chute high enough to suit the highest, it requires caution on the part of the car runner while handling cars under the breaker. Inasmuch as the cars are under control at all times, ordinary precaution and attention are all that are necessary.

Danger Signs Are an Aid to Safety

Another hazard is that of persons being squeezed between cars and the side of the breaker or breaker supports. In breakers that were built before the safety campaign assumed such proportions, wherein the clearance is not very ample—it would require great expense to remodel so large a structure and possibly interfere with production—a danger sign should be posted, warning all concerned of the accident possibilities while the breaker is running. During cleaning-up time, after hours, a man should guard the incoming end of the breaker to prevent cars from being run under the pockets. In new breakers, or at old breakers where interference exists that can be changed, a clearance of 7 ft. from the center of the track on each side should be made.

The foregoing probably covers every stage of the preparation of coal, but there are other hazards that occur throughout breakers and washeries in general. One of the most serious is that of horseplay. Very often boys have been injured while sliding down stair railings; teasing one another, resulting in coal, bolt nuts or other pieces being thrown and either striking the person intended or some bystander; wrestling, pushing through or over protective railings and chasing one another up or down steps. There is no question but that boys will be boys and enjoy fun, but there is room for an educational campaign on the proper way for boys to play, as exemplified in the publications of the National Safety Council. A splendid field for an educational safety campaign is afforded in every school located in a mining community and great benefits would be derived therefrom. Very often it is hard to determine whether or not the injury was caused by horseplay, but when fully proved it is sometimes effective to take advantage of the clause in the Workmen's Compensation Act of Pennsylvania which denies compensation for injuries received while engaged in acts which are not furthering the interests of the employer. This affects the boy's pay envelope, brings his parents' attention to the cause of the accident, and sometimes results in the boy being forcibly reminded of his carelessness. One case that comes to my mind is that of two boys fooling, then quarreling and finally throwing pieces of coal at one another; neither one succeeded in stopping the other until one boy threw a ¾-in. nut. This struck an old man, who was passing at the time, above the eye. Both boys were brought before the foreman, lectured and made to stand equal shares of the man's earnings while he was disabled. Horseplay in this breaker received a great setback.

Another hazard is the use of mushroomed tools by repairmen. The simplest and surest way of correcting this evil is to instruct the smith who sharpens the tools to dress both ends before returning them; also through periodical inspections.

In timber repairs, erecting additions, or construction work, safety belts have proved very satisfactory. In handling material, the heavy parts are usually hoisted in a corner of the building so situated that it is somewhat removed from the operating and frequently traveled part of the building, thus eliminating the hazard of falling material. Where canvas gloves are used by the men handling sheet iron for chute bottoms very few cut fingers result.

Suggestions for Mine Rescue Work

A portable telephone suitable for rescue and recovery crews is an important adjunct to a recovery outfit, especially for a crew that is descending a shaft and combating a mine fire. In recovery work an ordinary mine-telephone set and the necessary wires should be installed and be kept well up to the recovery crews. Such a telephone installation is of great advantage in case the ventilating fan stops and facilitates the sending of material where most needed. In the absence of a telephone, the main entries of the mine should be divided into sections of 500 to 1000 ft., and competent and reliable men should be detailed to patrol each section to give alarm on the occurrence of danger.

Men wearing heavy breathing apparatus should not be called on to transport dead bodies from a mine in case of disaster except in special emergency, and then for short distances only. Their work is to seek living miners, locate fires and rescue the recovery crews should they venture too far.

Some recognized authority must be in charge of the rescue and recovery operations at a mine following a disaster. This power should be vested in a man of good judgment, a cool head, and mild temperament. Such a person will confer freely with the men who have tendered their services and will not hesitate to ask for and receive suggestions. Executive charge will automatically go to the senior official of a mine, or to the state mine inspector, if the latter has arrived. The local officials are generally so much disturbed by the horror of the accident that they are glad to turn over the direction of the rescue and recovery work to the state inspector or to other qualified persons. In the early stages it may be necessary for the outside officials and employees to select one of their number to assume charge until the arrival of some more experienced man, such as the state mine inspector.—*Rescue and Recovery Operations in Mines.*

Increasing Coal Mine Efficiency—V

By CHARLES E. STUART
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SYNOPSIS—*This, the last article of the series on this subject, deals with central station conditions and problems. Many such stations are overloaded during the day, and as additional equipment is difficult to obtain these stations and their war-industry customers are faced with some objectionable but not altogether destructive alternatives.*

IN MANY mine centers served by central stations, as well as in other war-industry centers such as the Pittsburgh and Philadelphia districts, there is a growing power shortage and in other sections an approaching shortage. This fact is due to the rapidly increasing demand incident to the speeding up of industry to meet war necessity. I am familiar with a case where the demand on a central station serving coal mines almost exclusively has doubled within the period of a year.

Fig. 32 is a load curve of one of the largest central stations in the country serving mines. It will be observed that the demand is actually in excess of the present capacity of the generating station. In this particular case the present condition is the result of breakdowns. At the same time the company in question has insufficient reserve capacity and for that reason the failure of one of its larger units is sufficient to curtail service to the entire system.

Additional Units Mean Increased Investment

The question will be asked: Why not increase the generating capacity by additional units? To do this, as a rule, involves heavy investment cost. Many of the utility companies under present operating conditions cannot show a balance that would enable them to finance such an investment. Moreover, where satisfactory earnings are shown, there arises the question incident to the present high cost of apparatus and the relationship of such excessive cost to the conditions that will exist after the war, and particularly when the load falls off.

But even where the financial condition of a company is favorable, as is true in cases, there is involved the impossibility of financing against Government requirements and the difficulty of financing under the rules of the War Finance Corporation.

In spite of these considerations, the central stations are obtaining a great deal of financial assistance where it is necessary. However, even with funds needed for improvement in hand, equipment must be obtained and installed under nearly impossible conditions. There is a demand for turbine equipment far in excess of the supply. A turbine of any size today cannot be obtained within a year. Boiler manufacturers are in the same condition as are the turbine builders.

Where a breakdown occurs there is delay in effecting repairs, even with all the priority assistance that can be given. Furthermore, there is the consideration of skilled labor necessary to look after the complicated requirements of a central station system. Linemen and other similar help are not exempted. The chief engineer or the chief dispatcher in the central station is liable to call on short notice, with attending demoralization to service. All of these facts are focusing the consideration of the mine owners and central station operators toward establishment of measures of relief.

Mine Power Service Receives Priority

In Pittsburgh and Philadelphia recently the office hours of buildings, department stores, lofts and other similar power users have been staggered. No lighting or elevator service, for instance, is allowed to meet such requirements between 7:30 a. m. and 10 a. m. Mine power service in the Pittsburgh district has been given priority over service to all other war industries; thus, the steel mills in the Pittsburgh district are being subjected to shutdowns, while the coal mines are kept running. Non-war loads, such, for instance, as the glass manufacturers, have been required to go on night shift. Certain war loads are doing the same. The steel mills are already operating a night shift.

There are a number of alternatives with which the coal operators, as well as the central stations serving mines, will be faced, as conditions grow more acute. Some of these are enumerated as follows: Placing all non-war loads on night shift, insofar as they conflict with the mining or other war-industry loads. Placing cutting machines and pumps on night shift, where this particular class of load, if so placed, would take sufficient demand from the day load to be of assistance. This is now being done in the West Virginia fields. To stagger the loads—that is to say, start certain mines at an early hour in the morning, other mines a few hours later, and so on, thus flattening out the peak, and where conditions are extreme, to operate groups of mines on alternate days. The advantages from such procedure would be that the mines in operation would have continuous service and would not be subject to frequent shutdowns throughout the day, which has been found to be far more disastrous to the output than the alternative suggested.

Staggered System in West Virginia

The precedent for these suggestions was the arrangement made in the West Virginia coal fields a few months ago when a large unit broke down. In that case certain mines were operated in the morning and other mines in the afternoon.

The West Penn Power Co., of Pittsburgh, is suffering at the present time through a lack of capacity. In this case all non-war load has been thrown on night service. Even so, however, the demand is still in excess of the capacity by about 10 per cent. It has been arranged to cut off certain circuits for a period not exceeding 10 minutes and to rotate the cutoff so as to include all of the mines during the day. Thus, any one mine is liable to cutoff from one to three times per day for a period

of 10 minutes at each cutoff, or a total of 30 minutes during the day.

The result of the foregoing is to more or less systematize interruptions. The mines know when an interruption occurs that it is not going to last for more than 10 minutes. It is not possible to give any previous notice of an interruption, since the circuits are only taken off as the demand on the power plant exceeds a certain capacity, and that demand can never be predicted in advance. In this connection it has been found necessary to arrange for better coöperation between the telephone company, the central station and the mine, so that information concerning interruptions can be quickly transmitted.

There remains the radical alternative of night operation of mines. At the present time the West Penn Power Co. is taking on no new contracts unless the mining company is willing to operate at night. By referring to Fig. 32 it will be seen that after four o'clock in the afternoon and before seven in the morning the load curve is far within the generating capacity. Between these hours it is possible to take on additional load.

A few mines have accepted the alternative of operating at night, but they have not been on this service long enough to report results. However, it can be readily seen that the adoption of such an alternative may become inevitable, if production is to be maintained. Though the suggestion where made has been received with considerable disapproval, it may be noted that already many classes of war industries are accepting the inconvenience attendant upon night operation.

It is difficult to see why, if the steel mills, for instance, in normal times can satisfactorily operate on night shift, the mines cannot do the same, provided the necessity is sufficiently urgent. England, France and Germany in peace times have all established the precedent of a night shift. In a number of the mining centers of this country cutting machines and pumps have always been operated at night.

There are, however, on account of established precedent in this country, many difficulties to be overcome, and it is with a full knowledge of these difficulties, both physical and psychological, that I suggest that night operation may become inevitable in certain centers.

Not to do an injustice, it may be observed that many of the central stations serving mines have today ample capacity for their present as well as for additional load. Moreover, it is difficult to say that an operator with his own plant, the demand upon which is increasing, is in a particularly favorable position. The difficulty of expanding individual installations or of making new ones involve the same element of time, and the same considerations of high cost and skilled labor as those pertaining to central stations.

Today it will be far simpler from all angles to meet any large demand for additional power by increasing central station capacity than by the expansion of isolated plants, or the building of new isolated stations. Finally, it should be observed that through following some of the prescriptions elsewhere indicated, the operator himself can go a long way toward assisting the central station to take care of its load.

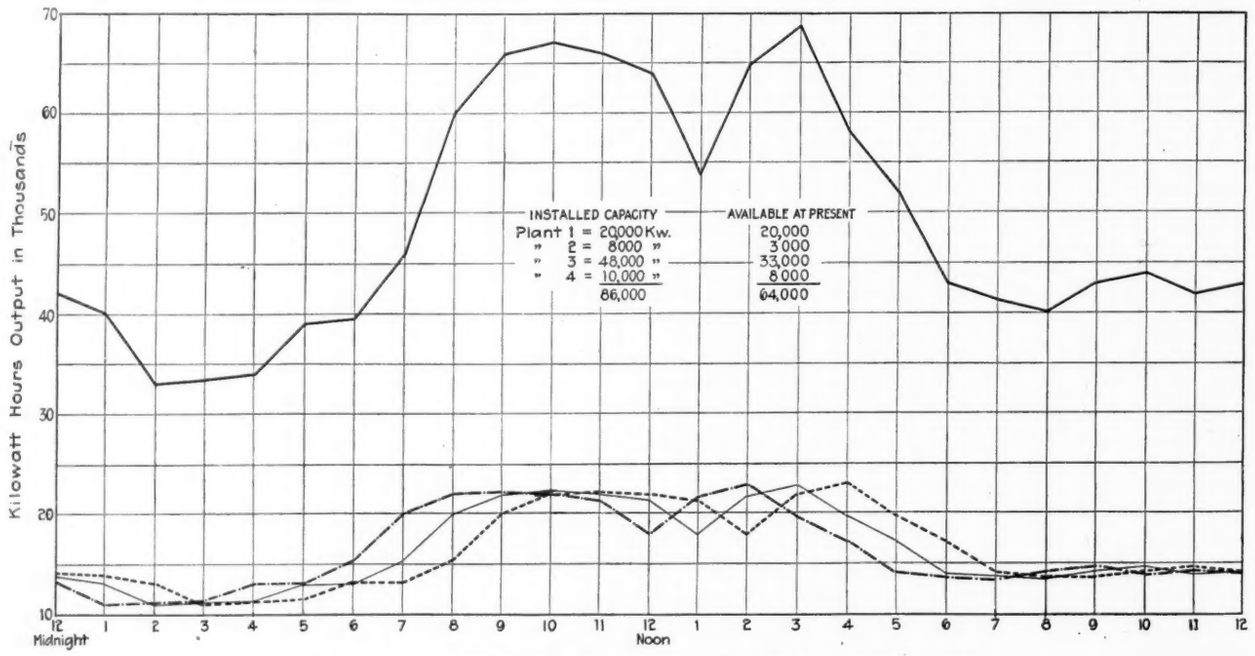


FIG. 32. LOAD CURVE OF A LARGE CENTRAL STATION COMPANY

Waste of Coal in Pumping Plants

It is estimated by the Chicago bureau of public efficiency that not less than 100,000 tons of coal are used annually in pumping water that is never used. This coal will keep 10,000 families warm during a cold winter. This waste could be put under control by the universal use of water meters. The Chicago water works is pumping about 260 gallons of water daily for every person in the city, which is about twice as much as most other American cities find ample for their needs. Pitometer experts have been at work searching for underground leaks which do not show on the surface of the streets. Several large leaks have been located and repaired.

Will Fuel Administration Cease to Function on Declaration of Peace?

Apparent proximity of peace has filled a great number of the men in important positions at the Fuel Administration with a great anxiety to return to their regular work. Some seem to think that the Fuel Administration will be the first of the big war agencies to go. While there is considerable demand on the part of consumers for the continuation of certain governmental regulations, it is regarded in some quarters that Congress would view unfavorably any proposal to continue the administration with the expiration of the present act.

The Railroad Administration, which will operate the railroads for twenty-one months at least after the signing of the peace treaty, will continue the zone system, it is said. Most officials at the Railroad Administration are said to be convinced that Government operation of railroads will continue indefinitely and plans are being made to perpetuate the zone system.

Such a decrease in consumption as may result from cessation of war work will be taken up, it is believed, by the normal industries, which have been curtailed. As a consequence, it is believed that the country can absorb the year's record-breaking output. It is also believed that the shipping situation will be such in the near future to permit of large coal exports.

Large Saving of Coal at Power Plants

Coal is being saved at the rate of 11,000,000 tons annually as a result of increased efficiency at power plants. While the Fuel Administration has returns to justify only an estimate of 7,000,000 tons saved, those in a position to know are certain that the higher figure is a conservative estimate.

For the efficient execution of the program of industrial conservation, under the plan developed, the engineers of the country have been mobilized through the professional societies and the operating engineers and firemen, and as a result there are today 1500 volunteer engineer specialists and power plant men organized by states, inspecting power plants, classifying them according to their operating efficiency, and aiding the work of rapid development. As a direct result of the operation of this plan, it is estimated that the total annual saving throughout the country will be about 25,000,000 tons of coal without reducing the output of the factories. Special printed material, instructing on the proper use of fuel, has been prepared by the United States Fuel Administration and may be obtained free of cost upon application.

The campaign has been organized in consultation with the State Administrators, the Bureau of Mines, and the Committee of Consulting Engineers of the Engineering Council, which represents the four national engineering societies. These four societies have contributed largely in supplying expert advice of engineering talent; special relations have been formed between the Fuel Administration and the National Association of Stationary Engineers, the International Brotherhood of Stationary Firemen and Oilers, the Laundry Owners' National Association, the Portland Cement Association and other national bodies who have given full coöperation to this plan.

Coke Workers Prove Efficient Railroaders

When the ranks of the men in the train service at the Republic yards of the Monongahela R.R. were invaded by influenza, it became impossible for the railroad to handle the cars to and from the coke ovens. Thereupon fifty coke workers, who had some knowledge of railroading, volunteered and cleared up the yard and saved a situation which threatened to stop coke production at Uniontown, Pennsylvania.

New Schedule of Anthracite Costs

After a period of intensive deliberation and discussion, the Fuel Administration has announced a new schedule of costs for the sizes of anthracite coal which comprise 70 per cent. of the total anthracite output. The actual increased cost per ton, because of labor, was found by engineers of the Fuel Administration to be 74c. This information was developed by taking the average number of men employed over a period of six months at each different kind of labor, in each mine, and developing therefrom the total increase in labor cost. This divided by the annual output of approximately 81,000,000 tons, gave the increased cost per ton. Dividing this in turn by the percentage of output over which the advance was spread, gave $1.05, the increase applied per ton.

While the new price schedule was not agreed upon finally until Nov. 6, it was made to apply to all coal mined on and after Nov. 1. Dr. Garfield, in announcing the increase in prices, emphasized the fact that approximately 60 per cent. of the season's supply was mined prior to Nov. 1, all of which will be sold at the former prices. "The full power of penalty under the Lever

Act," he said, "will be exercised to prevent the adding of any allowance to any coal shipped on or after Nov. 1 on which the increased wages were not paid."

The schedule takes care of no increased cost other than that of wages. The increase was based on a finding of the conference of National Labor Adjusting Agencies. That body found that wages in the anthracite region were below the standard paid in the bituminous industry and other comparable industries.

The increase was not applied to the remaining 30 per cent. of the output from the fact that, with any advance, bituminous coal would undersell these sizes and they would fail to move. Prices on sizes where no change was made are: Buckwheat, $3.40 to $4.15; rice, $2.90; barley, $2.65; screenings, $1.50.

The new prices make no change in the differential between the product of the large companies and of the individual operators. The new schedule is as follows:

White Ash Grade:		
Size	Operators	Price
Broken	Companies	$5.95
	Individuals	6.70
Egg	Companies	5.85
	Individuals	6.60
Stove	Companies	6.10
	Individuals	6.85
Nut	Companies	6.20
	Individuals	6.95
Pea	Companies	4.80
	Individuals	5.55
Red Ash Grade:		
Broken	Companies	6.15
	Individuals	6.90
Egg	Companies	5.45
	Individuals	6.20
Stove	Companies	6.30
	Individuals	7.05

Red Ash Grade—Continued:		
Size	Operators	Price
Nut	Companies	$6.30
	Individuals	7.05
Pea	Companies	4.90
	Individuals	5.65
Lykens Valley Grade:		
Broken	Companies	6.40
	Individuals	7.15
Egg	Companies	6.30
	Individuals	7.05
Stove	Companies	6.70
	Individuals	7.45
Nut	Companies	6.70
	Individuals	7.45
Pea	Companies	5.15
	Individuals	5.90

For purposes of comparison, prices of certain of the sizes on the schedule which have been superseded are given: Broken—White Ash, $4.90; Red Ash, $5.10; Lykens Valley, $5.35. Egg—White Ash, $4.80; Red Ash, $5; Lykens Valley, $5.25. Stove—White Ash, $5.05; Red Ash, $5.25; Lykens Valley, $5.65. The foregoing are company prices. The differential for individuals is 75c. The new prices are subject to the graduated reductions for summer prices.

Record Production in West Virginia Fields

October production in the Pocahontas and Tug River fields exceeded by 40,000 tons the production in any previous month of the calendar year. This production was attained by 13,000 men, or more than was mined by twice that number in normal times. Owing to the shortage of coal for the Navy and for byproduct plants, this unusual record is particularly gratifying to James B. Neale, director of production for the Fuel Administration.

Fuel Administration Insists on Clean Coal

Nineteen mines in Pennsylvania and Alabama have been added to the list of mines ordered closed by the Fuel Administration on the ground that coal was improperly prepared. This brings a total of closure orders to 111. The Fuel Administration now is in a much better position to check its requirements as to clean coal.

In the week ended Nov. 2, 637 reports were received from the Administration's inspectors and 81 from state inspectors, making a total of 718. These reports showed that 545 mines were preparing coal properly and 161 improperly. Sixty-six carloads were rejected at tidewater; eleven cars were penalized and one was condemned at the mines. Up to date 80 inspectors have been appointed by the Administration and 124 by the railroads, while 106 state inspectors coöperated with the Administration in the work.

Plenty of Coal at Army Camps

Orders for 4,350,811 tons of coal and coke have been placed by the Raw Materials Division, of the War Departments, for use in army camps, posts, forts, proving grounds and hospitals throughout the United States for the fiscal year of 1919. This tonnage consists of 3,691,650 tons of bituminous coal, 642,728 tons of anthracite coal and 16,288 tons of coke. The winter supply of coal at the various camps is rapidly accumulating and considerably more coal is on hand now than at the same time last year. On July 1, 1918, the reserve was 190,000 tons. By Oct. 12, 1918, it had been raised to 530,308 tons. The fuel supply at posts most distant from coal fields is receiving particular attention.

Speeding Up Coke Industry

The seriousness of the coke situation has spurred the Fuel Administration to extraordinary efforts to increase the supply. Less than a week's supply is on hand at the 411 blast furnaces of the country.

Appointment of W. S. Blauvelt by the Fuel Administrator to look after coke production is bringing forth early results. Increases in coke production have been reported from several of the important districts. To assist Mr. Blauvelt, production managers are being appointed in the coke-making districts. A. H. Carpenter has been appointed for the Birmingham district and George B. Hughes for the Clinch valley and Southwestern Virginia district.

Advises Mixing of Anthracite Coal

A saving of at least 25 per cent. of the larger sizes of anthracite can be made by the combined use of buckwheat with the larger sizes, the Fuel Administration believes. Such a saving has been accomplished in Vermont. Owing to the scarcity of the larger sizes and the comparative abundance of buckwheat, the Fuel Administration is urging the mixing of the two by domestic users.

Garfield Resents Interference with Plans

A house-to-house coal survey, planned by the police department of Greater New York, brought forth the following letter from Dr. Garfield to Mayor Hylan:

"I am informed that the police department of Greater New York intends making a coal survey for the Fuel Administration beginning Nov. 7. I am advised by Delos W. Cooke, Federal Fuel Administrator for New York, that such survey was not requested by him and that it would be an interference with the best distribution of the available supply of coal allotted to New York State.

"I must respectfully but firmly request that this survey be not made, and that you prevent interference with the orderly distribution of coal in Greater New

York under orders issued under my authority by Mr. Cooke. He has full authority to act and understands that you will coöperate with him to any extent necessary. I must insist that Greater New York authorities be not permitted to interfere with the action of the United States Fuel Administration."

Austria Able to Meet Its Coal Needs

Austria will be able to supply its own coal needs for this winter, the Fuel Administration is advised, but there will be no surplus for exportation to Italy, it is said. Owing to lack of food, production from the Austrian mines recently has fallen to 50 per cent. of normal output. The return of men from the army in good physical condition and the improvement of the food supply of the country will make it possible, it is believed, to attain again the normal production, which is sufficient for domestic requirements.

Coal Exports in September

Exports of coal, as reported by the Department of Commerce for September, 1918, and the figures for September, 1917, as finally revised, are as follows:

	September, 1917	September, 1918
Anthracite, tons	448,124	442,714
Bituminous, tons	1,812,412	2,170,425
Exported to:		
Italy, tons	33,201	None
Canada, tons	1,553,196	1,820,244
Panama, tons	15,786	94,795
Mexico, tons	18,941	22,746
Cuba, tons	80,302	98,022
Other West Indies, tons	23,473	21,026
Argentina, tons	12,072	2,738
Brazil, tons	37,391	33 829
Chili, tons	None	32,712
Uruguay, tons	5,244	39,023
Other countries, tons	132,806	5,290
Coke, tons	88,071	132,553

Imports of coal during September, 1918, were entirely from Canada. They amounted to 111,196 tons, as compared with 112,705 tons imported from Canada in September of 1917.

Lake Shipments to End in November

Coal from western Pennsylvania will be made available for New England, New Jersey and New York after Nov. 15, when Lake shipments will be discontinued. On the same date, coal from District No. 8 will be made available for distribution in western Pennsylvania, in New York State west of Buffalo and in Canada.

Coal Loadings Show Increase Over 1917

From Jan. 1 to Oct. 26, 1918, a total of 724,978 more cars of coal were loaded than during the corresponding period of 1917. For the week ended Oct. 26, as compared with the corresponding week in 1917, loadings of coal cars were as follows:

	1918	1917
Total cars bituminous	192,529	187,939
Total cars anthracite	32,059	41,747
Total cars lignite	3,416	4,148
Grand total cars all coal	228,604	233,834

The Senate Committee on Manufactures will conduct another investigation of the coal situation. Senator Reed, the chairman of the committee, and Senator Lodge, a Republican member of the committee, are particularly anxious to have another hearing following the line of the hearing conducted by the Manufactures Committee some months ago.

To Improve Power Conditions At Mines

Steps have been taken by the Fuel Administration to improve power conditions at coal mines. In each production district a power engineer is to be named. He is to head a committee of three and will be charged with the duty of improving power conditions.

Loads on power companies are growing rapidly, the Fuel Administration states, and the tendency is to take all the load offered so that in many cases there is no reserve, while the extension of work by agencies like the Ordnance Department, for example, foreshadows further drains on stations supplying mines.

"The central stations in nearly every coal-producing center of the country are overloaded," says a letter from the Fuel Administration to its production managers, "and eliminating the question of power demand for additional mines, the rate of increase of power demand of mines already in operation is rapidly increasing to a point where the stations in many cases will be unable to carry their load. We believe that by coöperation along these lines great service can be rendered."

Legal Department

WYOMING COMPENSATION ACT VALID — The Workmen's Compensation Act of Wyoming is constitutional and valid in all of its provisions. (Zancanelli vs. Central Coal and Coke Co., 173 Pacific Reporter, 981.)

CONTRIBUTORY NEGLIGENCE OF MINE DRIVER—Plaintiff, in collecting loaded cars in a Missouri mine, drove a mule attached to a car along an entry. Without stopping the mule, he stepped off backwards, without taking heed as to his location with a view to avoiding injury because of any narrowness of the entry at that particular point. He might have readily stepped off in the clear at a nearby point, but, alighting at a corner of a room neck, his back struck a hump or ridge in the side of the entry, unbalancing him and causing him severe injury through being crushed between the car and the side of the entry. Under these circumstances, it is held by the Kansas City Court of Appeals in the case of Maize vs. Big Creek Coal Co., 203 Southwestern Reporter, 633, that plaintiff was guilty of such contributory negligence as debars him from recovering damages against defendant, his employer.

LEASING A WARD'S LAND—A lease of a ward's real estate for mining or other purposes is not valid beyond the period of his disability, and the legislature of a state cannot validate leases beyond that time. This is the gist of an important decision handed down by the Kentucky Court of Appeals in the case of Lawrence E. Tierney Coal Co. vs. Smith's Guardian, 203 Southwestern Reporter, 731. A statute enacted at the 1916 session of the Kentucky legislature declared that the guardian of a minor or of a person of unsound mind might lease the ward's real estate "for the purpose of mining and removing all or part of the coal, oil, gas and any or all other mineral or mineral substances and products therein. . . . Such lease may be for such length of time as the guardian . . . may approve, without being limited to the time at which the disability of such infant or person of unsound mind may be removed." This statute, the court holds, is unconstitutional as an interference with the ward's enjoyment of his property rights on becoming legally competent to transact his own affairs. Speaking of the rights of a ward, the court said: "It is, of course, true that he will derive from it each year a valuable income, but this falls far short of the exclusive dominion that every adult citizen of sound mind desires and should have the high privilege of exercising over his own property."

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

The prospect of peace that brightened the end of last week had also the effect of making manufacturers less clamorous for coal. All of a sudden it seemed as if the fears of coal shortage were ended except in so far as anthracite was concerned. It seems certain, however, that a readjustment will soon take place, and the industries now restricted will come into the market and make their claim for full supplies of fuel. It cannot be that the frantic cry for coal will be followed by a surplus which will make the mine workers mark time even in the winter, when the demand is usually at its briskest.

However, no one can feel much confidence in the consuming public. When it cannot get coal it is ready almost to start a revolution to obtain it, and then, as soon as a slight letup in demand arrives, the average consumer is willing to wait indefinitely in order to force prices down. If it is criminal to raise prices in a public extremity it is equally criminal to depress them by concerted abstention from purchase. The buyer has duties as well as the seller. He has no more right to conspire to secure an unfair price than has the seller a right to conspire for the same reason. If it is not a conspiracy, but overstocking, then the buyer has been storing to excess and so has been acting equally unpatriotically.

MARKET ANSWERS THOSE WHO SEEK INCREASE

It may be said, however, that the condition of the market will do a great deal to make the mine workers of the bituminous region satisfied with their generous wages. They have been clamoring to Fuel Director Garfield and even to the president of the United States that wages were too low and that the profits of the operators would permit of a readjustment. If the industry is put fairly on a competitive basis and if the mines which ought not to be in operation are closed down by the decline in price it will no longer be possible for the mine workers to make complaint and the last will be heard of their demands, at least for a while.

The wage increase in the anthracite region which aroused the jealousy of the bituminous mine workers has not satisfied the anthracite men. The officials of the union claim that the faith of the board which determined the wage has been broken. It was clearly understood, they say, that the increase was to date from Oct. 1, whereas now the award is made, Nov. 1 is the date fixed, and the mine workers lose what it had been planned that the operators should pay them out of pocket, for only the wage could be retroactive.

The operators could not make a retroactive charge on coal already sold and in any event they have to write off expenditures between Nov. 1 and the date of Dr. Garfield's order of readjustment of prices. As the average increase per month to each worker is roughly $25 it is easy to see that the matter at issue was about $3,827,000 for the month of October only. The miners, however, would not feel satisfied even had Oct. 1 been set as the date for the adjustment. Some would set it back to a period some 10 months ago, to a point immediately following a conference which occurred early this year.

It is said that the anthracite mines are getting more men because of the increased wage. Probably the decreased probability of steady work in munitions plants has something to do with their return. The end of overtime and Sunday work has probably had some influence, as also the return of cold weather. This return of the working force should assist greatly in easing the situation in the anthracite region, now recovering from the ill-effects of the influenza.

Peace celebrations are proving severely restrictive of production even in those areas where demand continues at a maximum and is sure to continue even now that hostilities have come to an end, as we hope, for ever. Manager of Production W. L. Byers in the Connellsville region has been making personal appeals for more coke to the working forces of that region.

The appeal that the mine workers "work as they (the soldiers) fight" has been addressed to all the coke workers, especially to the Czecho-Slovaks. The mining and coke-yard forces, he has dubbed "Our Coal and Coke Army." The armistice, however, makes it necessary to write the matter differently, for we will have to work when the soldiers don't fight, for having won the war we must now make the peace secure.

RABBITS, CELEBRATIONS AND THE INFLUENZA

The opening of the rabbit season has made some mines in Pennsylvania close down. Coming with All Saints Day it was hard to prevent a general abstention from work. Especially was this the case in Butler County. Rabbits, celebrations and influenza combined to make a three-fold disturbance with which the production managers found themselves utterly unable to cope.

An excellent spirit has been shown by the men of Davy in the Pocahontas district, where the Superior Pocahontas Coal Co. is operating, George Wolfe being manager. Not only the miners are willing to help by doing more than a day's work, but the store and office employees and a clerk employed by the Norfolk & Western Ry. and one employed by the McDowell County Telephone Co. have gone to the mines to work after their regular day's work is done. They pledged themselves to mine two gondolas a week from the Cletus mine of the Superior Pocahontas Coal Co. They have been going to the mine every Wednesday and Saturday and have been returning home at midnight. The roster of patriotic men includes the mine foreman, two motormen, two brakemen, a mine engineer, a cashier, a bookkeeper, a scrip clerk, four store clerks and the two clerks already mentioned as not in the regular employ of the Superior Pocahontas Coal Co.

The influenza has been particularly grievous in the Fairmont region, especially in Barbour County, which lies on both sides of the Tygart River. The mines of the Winifrede Coal Co., just above Charleston, W. Va., have been put virtually out of commission by the influenza. The company had to erect a temporary hospital for the care of the patients. The influenza epidemic is raging also at Olcott in the Kanawha district. The New River district, which for a long time escaped the influenza epidemic, finally received it in its full strength. It almost closed down the operations of the New River Co. and those of the McKell Coal and Coke Co.

British Columbia Still Has Difficulties

British Columbia miners in the Fernie-Michel district of Crowsnest Pass are still working, but they have apparently decided that the conditions they have imposed on the operating company shall not be subject to the inquiry purposed by a royal commission. The men insist that the single shift must be permanent and they are strongly opposed to any investigation to determine the danger or safety of any other manner of operation. Knowing that any royal commission, which was ex-parte, would be regarded as unfair and invalid they have delayed appointing a representative to act for them on the commission. Consequently the commission cannot meet.

The mine workers declare that under Provincial Regulations which prohibit public gatherings as a step toward

stamping out influenza they cannot meet to make the selection of a representative. Strange to say, despite these Provincial Regulations they have been able to protest most vigorously against the no-strike order of the Dominion government. Apparently there is no risk of influenza when protesting against the government, but great danger when meeting to elect a representative for a royal commission.

The protest runs as follows:

"Whereas, the new order-in-council taking away from the workers in Canada the right to strike, although introduced as a war measure, will be made permanent if it can be made effective, therefore, be it resolved that the Gladstone local union 2314, United Mine Workers of America, register its solemn protest against such legislation, that a committee be appointed to interview Dr. Bennett, the federal representative of this district, and urge him to immediately wire Premier Borden a strong objection to the order-in-council, and that a copy be immediately sent to the trades and labor congress of Canada together with an expression of disapproval that that body has shown itself unworthy of confidence by its neglect to take drastic action in the face of the publication of such an autocratic order by the cabinet of Canada."

The circular sent out with this resolution to all organized labor bodies concludes by saying: "If we submit without protest to the passing of such an order, no labor organization will be necessary because we shall revert to abject slavery."

It was understood when the Fernie miners returned to work that all the workings except those rightly regarded as being development places should be placed on a single shift. The determination of this matter was naturally difficult. J. O. Jones, advisor to W. H. Armstrong, director of coal-mine operations in District No. 18, and Robert Livett, international representative of the United Mine Workers of America, accompanied representatives of the management of the colliery on an inspection trip of the mines as soon as the men voted to go back to work. They visited all the places alleged by the company to be under development. Over 30 of these development places occasioned dispute, but finally almost all of them were satisfactorily classified. Those which remained unclassified are to be referred to Mr. Armstrong for final decision.

Unique Mine Portal

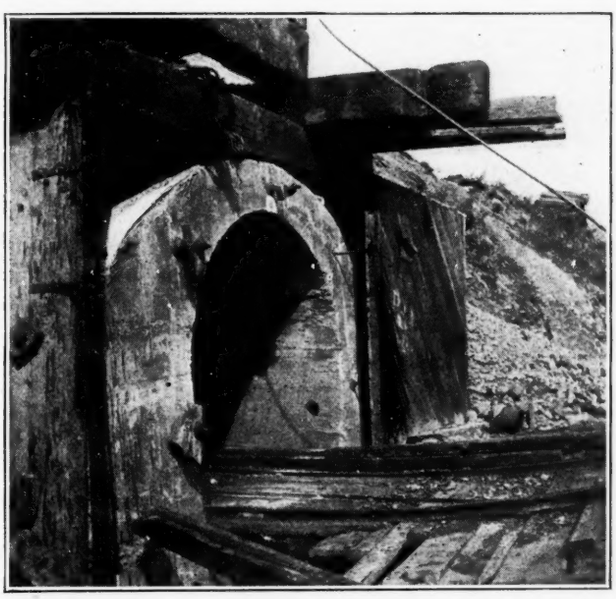
By Ralph W. Mayer
Connellsville, Penn.

The Beaver Mine is located a few miles down the Monongahela River from Brownsville, Penn. The coal it produces is all loaded on barges and shipped by water. The hill in which the coal bed lies rises rather abruptly from the river. The narrow bench between the base of the hill and the stream is occupied by the double-track line of the Pennsylvania R.R.'s Monongahela Division. The coal seam lies on a level with the railroad track, or lower. All the coal has to cross the railroad tracks in order to reach the barges on the river.

To build a high tipple from the mine across the railroad tracks to the river would have been expensive. This expense would have been unwarranted considering the small acreage that the mine will develop. A cheaper method of developing the mine had therefore to be used. A tunnel was driven from the river, under the railroad, into the hillside, striking the coal bed.

This tunnel was lined with thick walls of concrete well back into the coal. The portal, or entrance, is below high-water mark. This was necessary in order to get it under the railroad track. High water on the river would thus completely fill the mine. To prevent this a water-tight door was placed at the portal, or entrance, and another well inside the tunnel.

Around the entire circumference of the portal 1½-in. bolts were solidly embedded in the concrete. These were spaced about two ft. apart and were provided with suitable nuts. The door which closes the mouth of the tunnel has holes around its edges, corresponding to the position of the bolts embedded in the concrete. Four-inch washers are placed on the bolts on the outer side of the door, to spread the pressure of the nuts over a larger surface. This holds the door firmly against the concrete lining forming the mouth of the tunnel. All the seams or cracks around the edge of the door and between it and the concrete are caulked with oakum. A coating of pitch over this and over all exposed nail heads makes the door practically water-tight. The door is made from 2 x 12-in. planks placed horizontally with surfaced, tongued and grooved 1-in. boards nailed



UNIQUE PORTAL AT BEAVER RUN MINE

diagonally across them, on both sides. The second, or inside, door of the tunnel is made and fastened in the same manner. The entire inner surface of the tunnel is lined with concrete. This includes the floor under the track. When it is desired to place the door in position, a short length of track at the end of the tunnel is removed. No ballast is placed under this portion of the track next to the concrete, thus allowing the end of the concrete lining to be clear for about 2 ft. below the floor of the tunnel. The door therefore comes into contact with the concrete below the track. This seals the entrance, or portal, around the circumference.

A short incline runs from the mouth of the mine to an inexpensive tipple set on piling and from which coal is loaded onto barges. This tipple is made simple and inexpensive, so that it can be readily removed.

Coal Deposits of the World

The distribution of the coal deposits of the world tabulated by countries, is as follows:

	Short Tons		Short Tons
United States—including Alaska	4,231,352,000,000	Russia in Europe	66,255,000,000
Canada	1,360,535,000,000	Union of South Africa	61,949,000,000
China	1,097,436,000,000	Austria	59,387,000,000
Germany	466,665,000,000	Colombia	29,762,000,000
Great Britain and Ireland	208,922,000,000	Indo-China	22,048,000,000
Siberia	191,667,000,000	France	19,382,000,000
Australia	182,510,000,000	Other Countries	69,369,500,000
India	87,083,000,000	Total	8,154,322,500,000

EDITORIALS

Shall We Traffic with Germany?

WHEN the question is asked "Shall the Allies accept goods of Germany after the war?" the first impulse is to say "No"; for we are all apt to regard the purchasing of goods as a favor to be denied those who have offended us. Yet it is true that those who sell us goods do us a service. The man who sells us labor and materials is helping us by that act as much as we are helping him by making payment for them. We are bartering one kind of goods for another unless, indeed, one party is in debt to the other; and then the goods are not really exchanged but given in payment of the debt.

Germany will be the party in debt if she is compelled to pay reparation in accord with the evil she has done. She will be so much in debt that she will not be able off hand to pay what she owes. She will not have the monetary resources to meet her obligations with the savings of the past. She will have to earn the payment. She must mortgage the future. In a sense the world will be obliged to garnishee her wages.

But if she is to have work and earnings, some one must employ her, some one must buy her goods. When a man has been allowed to run up a big bill at the company store, out and beyond all reason, the manager of the company desiring to see it paid is quite apt to keep him at work regardless of his character. If the man is discharged, and worse yet, if he is blacklisted, there is no hope for payment; for what a man does not earn cannot be garnisheed. If we will not take spoil of Germany, year by year, how can she pay us the tribute that will settle the bills she has so lightly incurred?

No nation can do a business indefinitely that is all outgo. We cannot ship goods without taking goods in exchange, for no nation has the money to buy indefinitely, unless she produces gold and silver; and if she does, these metals, coined though they may be, are in themselves a form of goods. Germany cannot send us or the Allies the large amount of money due unless some one is willing to buy from her. We must therefore take our choice between reparation or ostracism, or impose both only in a degree.

If the Allies insist on the payment of the debt they must accept nearly all of it in goods, delivered over a period of years. They may regulate the nature and rate of the payment somewhat, but, in goods, payment must and will be made. Only by cancelling the debt or wiping out most of the account can we put up the bars resolutely against Germany.

The proposition revives memories of the discussion relative to prison labor. Some would keep the product of the prison from the market. As it is now, in general, we let the well-intentioned go without recompense and even make the well-intentioned part of the citizenry pay for the keep of the prisoner. He pays back nothing to society for what he has taken. There is no reparation, but there is punishment. The prisoner suffers and usually is rendered vengeful, and the public is in no way advantaged. As it is when we exclude prison goods so it will be if we wholly exclude German goods. The nations will have to repair what Germany has destroyed. Better it would be to take a few of Germany's goods till the bill is paid. We would keep them without further payment, and thus we would square up the indebtedness that is owing to us and our Allies.

Redeeming the French Coal Fields

THE newspapers have been persistent in playing up the town of Lens as the one coal-producing spot of France. The correspondents seemed to be obsessed with the idea that if the Allies had Lens, France was a coal producer, or might eventually become a producer; if the Germans had it, France had no coal. Like most newspaper tales, this does not represent the truth.

Coal is pretty well sprinkled over France. True, the deposits are not large, but they are worked quite generally. The largest body of coals is in the Départements du Nord and Pas-de-Calais. This is the deposit that the Germans invaded. They probably rendered much of it unworkable, for it is likely that much which they did not take they menaced or destroyed by their shells. Where, however, they did not actually take possession the destruction could not be complete.

It may be many months, even years, before the mines in the Département du Nord will be operable, and many around Lens in the Département of Pas-de-Calais will be equally slow in being brought to the point of production. Before the war the output of the mines around Lens was put at thirteen millions of tons, and the whole field, Nord and Pas-de-Calais, totalled thirty-seven millions, the whole output of France being forty-four millions.

Thus this one northern field produced about 70 per cent. of the coal and the region around Lens about 30 per cent. The other fields were the Loire, Bourgogne with Nivernais, Gard, Tarn with Aveyron, Boulonnais, Auvergne, Alpes, Hérault, Vosges, and the "West."

These many small fields have been greatly stimulated by the war. Whereas forty-four millions was the output of the whole country before the war started, in October of last year the production was at a rate equalling nearly thirty-seven million tons, or nearly 80 per cent. of normal. With peace established, with a return of the mine workers from the battling lines, and with the demand for coal at the 1914 figure, it is likely France could supply herself with coal without assistance from Lens and without any outside help other than such as she had always accepted.

But France has always used about twenty-two million tons of imported coal, and after the war the demand

will continue for a while to be abnormal. That demand may be as large or larger than it is today. It is doubtful whether Great Britain will be able to supply it all, for the demands of its own trade will be quite large. Every effort will be made to retain the French as Great Britain's customers, and to that end England will go short herself rather than lose her prestige in France.

All But the Squeals

IT IS said that every part of the hog, except the squeal, is used by the packer. That cannot be said of coal. We demand that the bone be left in the mine and the pyrite also. There are clays which would serve for the making of brick. There are bituminous shales which could perhaps be profitably worked for their oil. But we leave these in the mine and tumble the roof upon them. Some day we may save all these byproducts of mining. We know there is something combustible in shale when we note how hotly a rock dump without any coal in it will burn. There seems to be no fuel present, but the pile is nevertheless inexplicably hard to extinguish.

Should we some day pay the miner by the day instead of by the ton, we shall be able to extract the coal even cheaper than we do today; and if we are willing to take all that goes with it, we shall find that we can get the other minerals—bituminous shale, bone coal, sulphur, clay and brick shale—for little additional cost. As it is, we operate our mines on the piece basis and pay no more for clean coal than we would have to pay if we took all that comes; so we demand that the coal shall be clean. If we were buying only the meat of pork, and told the farmer we wanted the bones also, he would try to give them to us at meat cost; and if he was as illadvised as the miner, he would hold out till he got it accomplished, and he would in consequence sell no bones at all at any price. If a contract had been made of this kind with the farmer, the meat business would never have reached its present stage. Let us think seriously of the time when we shall use every part of the mineral deposit—all except the squeals.

Are These Sudden Scruples Inspired By German Statements?

BEFORE the war we sent our goods to Great Britain without tax, but we taxed all that Great Britain sent us. Then we tried to make reciprocity arrangements with other countries which had tariff walls against us. We sought in these to give them a lower tariff in return for lower tariffs in those countries. Thus, though Great Britain admitted our goods free we tried to arrange matters so that Great Britain would in trading with us be at a disadvantage as compared with other countries, and in trading with other countries would be at a disadvantage as compared with us.

We did not think for one moment it would make Great Britain bitter. We did not believe it would be a fosterer of wars. We trusted her breadth of view to prevent any such thing. No! that does not adequately express it. We could not conceive that any such action on our part would make a criminal nation out of Great Britain, of whom we believed instinctively almost everything good, though we were somewhat chary of stating it. We knew what we might do financially against her could never make her take up the sword against us.

What has made such a change that we are told today on excellent authority that "the experiences of the past among nations have taught us that the attempt by one nation to punish another by exclusive and discriminatory trade agreements has been a prolific breeder of that kind of antagonism which often results in war, and that if a permanent peace is to be established among nations every obstacle that has stood in the way of international friendship should be cast aside?" What has made this change in viewpoint? Is it not Germany—that Germany that bleats like a lamb yet has the horns and tactics of a goat?

Before the war we endeavored, in the traffic of some materials, to make arrangements as hard and painful for Great Britain as those we are now discussing for Germany. We tried to do to Great Britain, seeing that she was generous and easy, what we are trying to do today to Germany because she is so vicious. We did not think it dangerous then. It wasn't dangerous. It is dangerous only with Germany because of a certain inherent satanic quality of the wild tribes beyond the Rhine.

Surely no moral scruples should restrain us—scruples to which we have been strangers hitherto. If we so desire, we have a perfect moral right to keep Germany from our market and admit the Allies thereto. If we have not, then we are convicted of years, generations even, of a certain moral obliquity. Germany surely realizes, deep in what should be a heart, that she richly deserves punishment.

If we schemed to make Great Britain pay the penalty of discrimination without desert on her part and for her very virtue, surely we should not hesitate to make Germany pay it in view of the blackness of her many infamies. Everyone is aware of the maudlin disposition to punish a peccadillo with fine and imprisonment and to rebuke murder with a mere slap on the wrist or a harsh look. The plans of those who would spare Germany from exclusion from our markets out of mercy and would reserve that punishment for some other country are amazing.

Are we looking for a country more infamous than Germany before instituting this penalty, or are we planning to visit that punishment on some better country who may anger us not by murder but by failing to invite us to participate in some portion of its trade or by holding out from us some trifling privilege of transportation—a port leave, for instance, or the right to use a canal, a channel or a water power? True, that would be a preventive and not a punitive action; but it is providing a bigger punishment for a peccadillo than is provided for a crime of outstanding heinousness. It is making a mountain out of a molehill, and, worse yet, a molehill out of a mountain.

The question of whether we will ostracize Germany from our markets is not so much one of morals as of expediency. It is likely that confronted with difficulties in reparation we and our allies will be disposed to let Germany trade a little with us and that we shall remember that if Germany's trade is so barriered that she can do business only with neutrals we shall find her competition with us made the fiercer by that restriction.

MOVING MINING MACHINERY

Safety Letter from a Large Company to Its Men:

A mining machine can at times act almost like a wild beast in tearing or lacerating hands and feet. It is most important that men operating machines should learn to think and thus anticipate what may be the next movement of their machine.

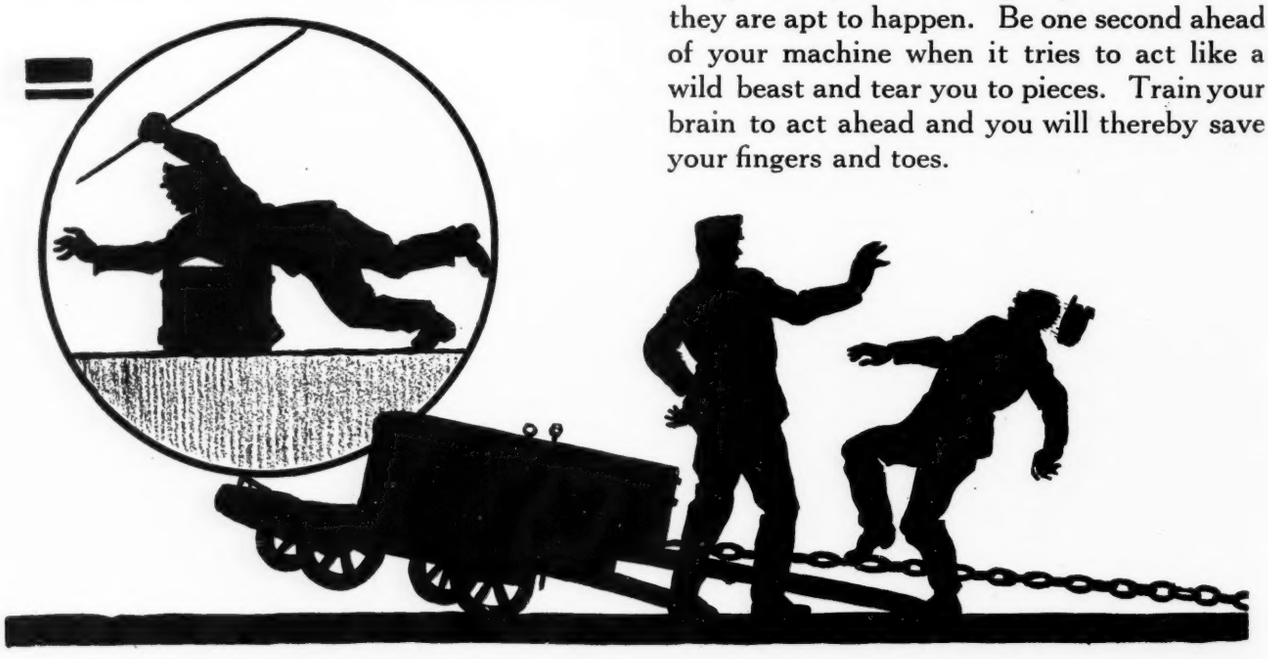
A lion trainer in a cage full of roaring lions is perfectly safe just because he knows exactly what each lion is going to do the next instant and knows it one instant before the lion can do it. He has a trained mind which can anticipate the lion's next act, and he has trained himself so that he knows what he must do to protect himself before the lion is able to act.

Mining machine men must especially look out for their own safety by knowing how accidents have happened and by understanding beforehand what they must do to protect themselves. They must train their brains to keep one second ahead of their work.

In this company nine men have this year broken ribs by falling over the frame of the machine when the bar they were using to

skid the machine slipped. Four men have this year had arms or feet caught by the sudden tilting of the machine as it was unloaded. Three men, while walking or crawling alongside of the machine, have had hands or feet injured, either by slipping under it or by having it upset and fall on them.

Your life is the most important life that has ever been lived—so far as you are concerned. You know bars will slip when skidding your machine. Be prepared for them to slip. You know machines will tilt up when unloading them. You know machines are apt to get off the track—but why tell you these things which you already know? The big thing is for you to anticipate the time when they are apt to happen. Be one second ahead of your machine when it tries to act like a wild beast and tear you to pieces. Train your brain to act ahead and you will thereby save your fingers and toes.



DISCUSSION BY READERS

Iron vs. Wood Mine Cars

Letter No. 2—The inquiry pertaining to the choice between iron and wood mine cars, which appeared in *Coal Age*, Sept. 26, p. 615, was doubtless read with interest by many. This is a question that is often discussed, in the different coal fields, where there are always strong advocates of both of these types of cars. There is also a multitude of men who are wedded to a composite or combination steel-and-wood car.

Many different details, however, enter into and decide the choice of a mine car, as to the material to be employed in its construction. For example, a mine located in close proximity to good oak timber that will enable a company to build its own car bodies, ready for mounting on a high-grade truck, which together with the body irons can be obtained at a reasonable cost at a nearby factory, will generally decide the choice in favor of wooden cars.

In such a case, the present high price of steel and the difficulty of obtaining it make the use of wood for the purpose more than ever desirable. Moreover, a wood car that will carry as much coal as an all-steel or composite car will cost less and be less subject to the corrosive effect of the acid mine waters, which often makes the wood car desirable.

Combined Iron and Wood Cars Give the Greatest Amount of Satisfaction

Where conditions are favorable, however, the consensus of opinion seems to favor a combination of these materials or a composite type of car, having steel sides and ends and wood bottoms. The most serious objection to an all-steel car is the fact that where a wreck occurs in the mine and the cars are piled up, one or more of them will be banged so badly as to make their repair difficult and cost almost as much as to build a new car.

It is true that when a wood car is built properly it is frequently a massive affair and cumbersome. Also, while a wood car is durable, it does not have the same flexibility as a part steel and part wood car and, for the same outside dimensions, its capacity is appreciably less than that of a steel car. In my experience, a combination steel-and-wood car is more easily dumped, especially when a thin piece of steel is laid over the plank in the bottom of the car, as the coal then slides more readily from the car.

A minor point, but one that is still worthy of consideration, is the fact that the center of gravity of an all-steel or combination steel-and-wood car is relatively lower than in a wood car, and less racking of the car and wear and tear of the running gear results, and there is less coal spilt along the roadway. Where the cars are equipped with plain-bearing wheels, the jerk of the locomotive, in starting a trip, is more severe when the center of gravity of the car is higher above the tracks. This matter is not so vital, however, where the cars are equipped with roller bearing wheels, as the trip is then started with less jerking and bumping.

Everything considered, my choice favors a composite car, strongly braced and equipped with roller-bearing wheels. The question of the extra weight of all-steel cars is of more importance where heavy grades occur on the haulage road or the cars must be hoisted in a shaft or slope.

OPERATOR.

Philadelphia, Penn.

Mining Equipment

Letter No. 8—Speaking of mining equipment, the repair of broken parts in and around a mine has always been a source of trouble to every superintendent and foreman. A vital piece in a machine that is in constant use suddenly breaks. The nearest foundry is several miles away. Unless the old part can be patched or a new part secured immediately, a shutdown will result. The case is urgent, the need pressing; what is to be done?

Fortunate, indeed, is it if the superintendent has learned of the general use of the electric arc-welding machine, which has followed so closely on the heels of all modern equipment. Some time since, he heard that good welding could be done by this machine; and, efficient man that he was, he secured one in anticipation of just what has now happened.

The new device has been in use in the shop long enough to enable a workman to be thoroughly acquainted with its use. Word is telephoned to the shop and, in less than an hour, the broken part is mended and the disabled machine is again in operation and the dreaded shutdown of the mine avoided. In the meantime, a new part is ordered to be sent from the factory and held in readiness to replace the mended part should it give way again.

Saving Effected by Arc-Welding Process

The importance of the arc-welding machine, in such work, can scarcely be overestimated. The average railroad machine shop, a few years ago, was wasting thousands and thousands of dollars, because they did not know that broken parts of steel or iron could be welded and made fit for service again. Few had faith in the welding process. Locomotives were laid up for weeks while being fitted with now boiler tubes, and a breakdown on the road meant a staggering loss to the company.

Many of our mines, today, are throwing away thousands and thousands of dollars, because of the same ignorance or lack of faith in the efficiency of the welding system. Many mine operators, superintendents and foremen have yet to learn that butt-welded joints can be made almost as strong as the original metal, by

welding with or without reinforcement. Where reinforcement of the metal is possible, however. the original strength of the metal can be realized. Experience shows that much stronger and more perfect joints can be made by the electric process than by the usual gas method of welding, and the cost will be but a fraction of that incurred by the use of gas for this purpose.

No Preheating Required in Electric Welding

An important feature in welding with electricity is that no preheating of the parts is necessary in making an ordinary weld by the electric process; but the use of gas for that purpose generally requires the previous heating of the parts so that the filling metal will not be chilled, which would impair the strength of the weld. In the electric process, the material to be welded is the positive terminal and, consequently, the hottest, which insures perfect fusion, as the heat generated warms the material and prevents the chilling of the filling electrode or material.

The welding equipment is very simple in construction and has no complicated parts that require expert knowledge to keep them in serviceable condition The device has been so improved and protected that it is nearly foolproof and can hardly be misused. The equipment consists of a suitable motor with a low-voltage generator, which is protected against overloads caused by heavy rushes of current at the time the arc is struck.

Because of the low voltage, it is necessary to make contact and then break away when drawing the arc. By "making contact," I mean that the metallic or graphite electrodes must touch the metal that is to be welded, in order for the flow of current to start. It is at the time of drawing the arc that heavy overloads occur. Then, if the right kind of attachments is not employed, the generator will likely be put out of commission. Cast iron, steel and cast steel are the most common materials that can be handled to the best advantage by the electric-arc system.

Skill of the Welder an Important Fartor

The average worker who has been properly instructed in the process of mending broken parts is fast being recognized as one of the most useful men around a plant, since it is his skill that will often keep the plant going when otherwise it would have to close down to await repairs. The fact is generally accepted that the enormous saving, which has been proven in railroad and electric railway shops, can be exceeded by the more general use of welders at the mine. This is because of the fact that the location of the latter is generally inaccessible to the sources of supply and often void of good shipping facilities.

It should be stated, here, that when welding smaller pieces the metallic electrodes are used and the amount of current varies from 50 to 200 amp., depending on the bulk of the material or size of parts to be welded. Where heavier parts are to be welded, however, carbon or graphite electrodes are used, and the current varies from 300 to 600 amp. These varying degrees of current are obtained by the cutting in or out of the resistance.

Good welding can be done by the use of a sufficient number of cast-iron resistance grids; but that method is wasteful, because much of the electrical energy is then dissipated in the form of heat, by reason of the resistance grids. The use of the regular electric arc-welding equipment is much more economical where the current is drawn from the main power line. In fact, the use of this welding outfit has proved so economical that it is hard to understand how the mining industry has overlooked its possibilities for so long a time.

What needs to be safeguarded against, however, is the lack of skill of the worker. A poor welder can ruin a vast quantity of material, while an efficient welder is worth his weight in gold, by reason of the economies he will effect. All reliable vendors of electric arc-welding equipment are ready to furnish the services of a skilled demonstrator, at a nominal charge. In ten days' or two weeks' time such a one can thoroughly train a bright man in the successful operation of the equipment.

F. K. Howard.

Philadelphia, Penn.

Ventilating a Gassy Slope Mine

Letter No. 6—Being a coal miner of 33 years' experience in the mining of coal, both in Scotland and in this country, and being familiar with the varied methods of working coal seams and the essential requirements in order to secure the best results in production, I am not surprised at the frank manner in which "Mine Foreman" seeks information, through the columns of *Coal Age*, in regard to the best method of ventilating a slope mine that he is about to open in a seam having a general dip of 6 per cent. and generating large quantities of gas, as stated in the issue of July 25, p. 191.

In the haste to realize on the investment and secure quickly a large output of coal, very little thought is often given to the essential features of the ventilation that will be required in the future development of the mine. These requirements relate to the number, kind and size of openings; kind and size of ventilating fan; and the volume of air that must be circulated in the mine to comply with the mining law of the state and give to each man and beast employed in the mine the specified quantity of air. The circulation must, at the same time, be sufficient to dilute, render harmless and drive away the gases that would otherwise accumulate in the workings. Such are the important features that must be considered in the prospective ventilation of a mine.

Requirement of the Colorado Mine Law

While the driving of three main slopes on the full dip of the seam, as suggested in the reply to this inquiry on the same page, is a proper answer and will apply to the opening of such a mine in most states and districts, it does not meet the requirements of the coal-mining laws of Colorado, where the new law provides for an independent opening called a manway or travelingway, which must be separated from the main haulage opening by not less than 300 ft. of natural strata, except as otherwise permitted by the written consent of the chief coal mine inspector.

The suggestion of R. W. Lightburn, in his excellent letter on the subject, Aug. 22, p. 373, more nearly expresses my idea. Mr. Lightburn states that this mine should be opened by five headings driven on the dip of the seam, adding that two of these should be made intake airways and haulage roads, while the remaining

three entries would serve as return airways. But, inasmuch as this arrangement would necessitate men going to and from their work, either traveling the haulage road or one of the return airways, I am obliged to differ with him somewhat, in respect to this plan.

In my opinion, it is not safe for men or animals to be obliged to travel a main haulage road; neither do I consider it a healthy proposition for miners to be obliged to use the return airway in order to reach their working places. The plan I would propose for opening this mine consists in driving not less than five slopes on the full dip of the seam. Indeed, better results will often be obtained by employing seven openings, which will provide ample facilities for ventilation, especially in a mine generating much gas. I consider that good ventilation is the most essential feature in any mine, whether the seam is generating gas or otherwise. In the matter of securing the economical production of coal, let me say, the ventilation of a mine is second only to that of hauling, as miners will not work in a poorly ventilated place any more than they will tolerate bad haulage conditions and a limited car supply.

Allow me, therefore, to advise "Mine Foreman," in opening his mine, to adopt a method that will provide ample facilities for ventilation. After the five main slope openings have reached a sufficient depth, cross-entries or levels should be turned to the right and left, on the triple-entry system. If this seam is generating gas in large quantities, the cross-entries should be driven to the boundary, while butt headings are driven off these on the full pitch of the seam.

Retreating Panel System of Working

I would suggest driving the cross-entries or levels at distances of 100 yd. apart and the butt headings 200 yd. apart, so as to block off the coal in sections or panels measuring 300 x 600 ft. This will have a tendency to drain the gas from the coal before the panels are worked. In this plan, roomnecks can be turned, but the rooms should not be opened or widened out until the butt headings, in each section, hole through into the return airway above. Both on the main slopes and on the cross-entries, the center entry is made the haulage road.

In working out the coal on the retreating system, the work should be started on the inby section at the boundary. No pillars should be drawn, in any of the rooms, until all the rooms in the block are finished, when the room pillars and entry stubs should be drawn back in regular order and that section closed. If the triple-entry system is employed, as here suggested, not a door will be required on any haulage road.

In the operation of a gassy mine, let me suggest that electric cap lamps should be adopted and safety lamps used only for testing for gas, by the firebosses. I would recommend the use of the cap lamps approved by the Bureau of Mines, as soon as gas appears.

The suggestion of duplicate fans being provided is good; but, in my opinion, that is hardly necessary where the fan is operated by a steam engine. Under no conditions would I approve the use of an electrically driven fan for the ventilation of a gassy mine. Such a fan may be thrown out of commission by a thunder storm.

Since every mine must be operated in compliance with the state mining laws, it is important for a mine foreman to consider carefully the requirements. He must think twice before starting operations. Where a seam is liable to generate gas, it may happen that a mine foreman will get what the miners call a "lead-pencil mark," and still be able to operate his mine and avoid serious difficulty, in a seam dipping only 6 per cent. from the surface.

No gas may appear to cause trouble, for a long period of time and, then, the foreman may get a pencil mark that will cause him to sit up and consider. The longwall method of mining, when this can be applied, affords the best facilities for ventilation and not much difficulty will be experienced with the gas, only the circulation must be sufficient to comply with the mining law.

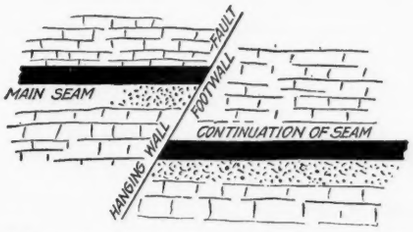
In closing, let me say that at this time, when miners are "going over the top," both in the purchase of bonds and the production of coal, it is more than ever important that they be provided with good air when working in the mine and given every opportunity to do their utmost in the winning of the war.

Farr, Colo. Robert A. Marshall.

Locating the Coal Beyond a Fault

Letter No. 1—From the description of the fault given by "Superintendent," in the inquiry in *Coal Age*, Oct. 24, p. 797, there is no doubt in my mind but that this is a reverse fault.

What is known as a "reverse fault," in geology, is one in which the hanging wall has slipped upward on



ILLUSTRATING A "REVERSE FAULT"

the footwall. The movement has taken place as the result of enormous pressure that has pushed the strata forming the hanging wall and caused it to slide upward over the footwall, along the line of fracture. Such a fault is sometimes called a "compression fault."

What leads me to conclude that this is a reverse fault is the fact mentioned regarding the appearance of the strata at the line of fault. It is stated that the strata had apparently been subjected to a tremendous pressure, as the rock there is much broken. That is just the condition in a reverse fault. The strata are much crushed along the line of fracture, making it difficult and, at times, impossible to identify any of the layers.

As a rule, there is generally a thinning out of the seam at a fault line, and the strata often show an inclination in the direction in which the slip has occurred.

I agree fully with the suggestion made in the reply to this inquiry, that the coal struck in the two boreholes belongs to the "X seam," and that if the holes had been sunk a few feet deeper they would have found the "Y seam." I would say that the throw of this fault is from 45 to 47 ft., as has been already suggested.

Tomhicken, Penn. Joseph Lawrence.

Justice to the Miner

Letter No. 5—Some time ago there appeared in *Coal Age* [July 6, p. 29] the record of a coal miner who loaded 23 tons of coal a day, which was his average for an entire month of 22 working days. The statement led to a discussion that showed what can be accomplished by a good patriotic worker where the conditions are favorable. Whether or not that was the case in the instance mentioned the record was a good one.

However, in justice to many miners who are unable to make such a record, it must be remembered that many conditions exist in the mine that govern and control the possible daily tonnage of the miner. While some miners will shoot and load a large tonnage even where conditions are not particularly favorable, there are others who will load little more than half of such tonnage, under the same or even better conditions.

Much will depend on whether the mine is worked by machine or the coal must be mined with the pick. At times, the coal is already mined and all the miner is required to do is to load it into the cars. The thickness of the seam and the quality of the coal are also large factors in loading a big tonnage. Where the coal is a good thickness and clean and the car supply is ample it is not difficult for an experienced miner to duplicate the record mentioned. On the other hand, in thinner coal, or where the seam contains binders or other impurities that must be separated before the coal is loaded into the cars, the best miner cannot equal such a record.

Big Records Not Frequent in Pick Mining

Large daily records are difficult and quite uncommon in pickwork, while in machine mining and when drawing pillars under favorable conditions, it is nothing extraordinary for a good miner to load a big tonnage. Only a few days ago, a miner working in a 6-ft. seam having one binder loaded 16 cars holding 1½ tons each, which made a record of 24 tons, but that was in pillar work. At another time, I observed a miner make a record of 25 tons, in a single day, loading coal that was already mined.

As I have stated, it is evident that the conditions under which a man is working are a large factor. It would certainly be impossible to make a big tonnage in a low seam or a thick seam with binders and impurities that must be removed. When a man loads 23 tons of coal a day, he has no time to clean the coal, and he must have plenty of room to move around quickly. He must also have one or more cars on hand in his place all the time.

Strange as it may seem, loading a big tonnage does not depend so much on a miner having the coal down and ready to load, as on his having one or more cars in his place ready to be loaded. A good miner will seldom keep a driver waiting, whether his coal is down and ready to load or must be mined, as he plans his work according to the cars he has to load. If an empty car is standing in his place all the time, there will always be a load ready for the driver or motorman to take out when he comes.

Let me say, here, that the operator and the miner alike are gainers when the foreman sees that every working place has a car in it ready to load. When a load is taken out, an empty should be set in its place. But when a miner has his coal down and ready to load and there is no empty car in his place he ceases to work and both the miner and the operator sustain a loss.

It is true that many miners will shovel their loose coal back out of the way to make room for more, while waiting for cars; but this means performing double work and is a loss in efficiency. No miner can load the same large tonnage when he must do this. If the car is ready in his place, the loose coal is loaded into it at once, and the work is not impeded by handling the coal twice. Every miner will load an empty car as quickly as possible, in order to get it out of his way; but when no car is on hand, he works more leisurely.

Thomas, W. Va. EXPERIENCE.

Letter No. 6—Coal miners, today, are confronted with the greatest, most vital, and most important task on which the fate of the world depends, and I want to say most nobly are the miners of this country responding to the call and demand made on their patriotism. With depleted ranks, they are doing splendid and remarkable work in keeping up the production of coal to its present standard.

To the earnest onlooker, it appears as if the great body of coal miners are falling into line in military order, the employees at each colliery forming a company, while the combined forces of a large coal company, operating many mines, constitute a regiment. The superintendent is the major in command, while each mine foreman is appointed to the duties of captain, and all the assistant bosses are his lieutenants and training officers. The miners themselves are the rank and file that form the great service army on which the fate of the world depends. In charge of this great organization is Fuel Administrator Garfield, who is the commander in chief.

While the work of the miner as compared with that of the soldier at the front is vitally important, his sacrifice, in contrast to the sacrifice of those who have answered the draft call, is as the light of a candle to that of the sun. But the fighting army at the front and the industrial army at home are mutually dependent on each other. Without the product of the miners' work, the armies would be helpless; and without the supreme sacrifice of the soldier, the miner would shortly experience days of tyranny equal to those witnessed in Rome in the time of Nero.

Problem of the Production of Coal Growing in Importance

As the war continues, the question of ultimate victory grows in assurance, while that of the needed production of coal is a matter of some concern. The problem is how to increase production with an ever-lessening number of men. Failure to meet this situation would mean both disaster to our army and suffering in numberless homes the coming winter.

However, the noble response of the great body of miners is a sufficient reply to the country's need. They declare as follows: "As a large service army, the miners will not prove false to the trust reposed in them; we will not lose work without reason and gamble our liberty for the lives of our boys, in this hour of the country's need."

Let us strive to introduce into all the mines the same spirit that animates the men in service on land or sea. No sooner does a soldier or sailor fall sick or become disabled than his place is filled by a volunteer whose thought is not for himself but for his country. When the miner has the same desire to keep the coal moving, and is ready and willing to jump into any place where he can serve best, then and only then will we be living up to the patriotism that we inherited from our forefathers, who fought for the freedom of America.

Today, a few districts are falling short of their maximum output, and it is the duty of men in those districts who are not engaged in Government work to heed the call of the colliery whistle in the morning, which is like the bugle call to arms, and volunteer their service for the sake of their country and the freedom they enjoy. Like our boys in France, let us go to our work in the mines singing and filled with the same enthusiasm, and showing the same American spirit, which is the promise of victory. JOSEPH R. THOMAS.

Plymouth, Penn.

Letter No. 7—I have been following closely the numerous references, in *Coal Age* and in the daily press, to the attitude and disposition of the miner in respect to the war. For the most part, the merry chorus has been hammering the miner and calling him to account for his seeming disloyalty. Many of these remarks and comments do a great injustice to our miners as a class. We Americans are too prone to place the blame for conditions before we have carefully weighed the evidence.

That there is intemperance in the coal regions cannot be denied, but it is also true that the same condition exists in other great centers of industry. Compare, for a moment, the workers in the mines with those engaged in building ships. No protest is heard when the report comes from the shipyards showing that 185,000 rivets were driven on Saturday and only 85,000 on the following Monday; and yet the work of shipbuilding is as important, today, as that of mining coal. Failure in either case cannot win the war.

CONDITIONS IN THE ANTHRACITE REGIONS WHERE FOREIGNERS OUTNUMBER AMERICANS

Glance for a moment at the conditions existing at present in the coal regions. Some years ago the foreigner was induced to come here and go into the mines. It was the hope of operators that coal would be produced at a cheaper rate than that paid the American miner. The result is that the foreign miner now outnumbers his American coworker. It is not always the case that the sympathy of these foreigners is with our cause, although that may not be altogether his fault, which is often the case. A large majority of them cannot speak and much less read the English language. Their knowledge of conditions must, therefore, be obtained through an interpreter, who is always in a position to instruct and guide them according to his own inclinations.

A recent case in hand is that of a certain local in which the Americans were outnumbered by the foreign-speaking miners to such an extent that many of the former ceased to attend the meetings. The foreigners were instructed by an interpreter who cared nothing for American army success, but much for American money. The result was that a vote was secured that had the effect to restrict the production of coal in that locality. This was shortly after corrected by the union officials in the district; but, in the meantime, the miners lost much time and needed money.

Again, there can be found, in all coal regions, little executives who lack vision. Instead of inspiring their men they retard production by the "swashbuckling" attitude that was so common in the coal fields before 1902. To curse men and to attempt to make them work faster by threats may succeed for a brief period, but in time such methods will cause rebellion.

As a boy, I remember the banner carried by the miners, at my home, in their first union parade. The banner was inscribed "Gomer Jones, our First Organizer." Mr. Jones organized his men by using the whiphand over them; and a large proportion of our foreign-born miners are under the same control. Such are the conditions that affect the loyalty of many of the workers in our mines, today.

INFLUENCE OF ITALIAN MINERS IN RECENT STRIKE IN SCHUYLKILL COUNTY

Let me refer, here, to the recent struggle in Schuylkill County where the Italian miners were willing to work, because the war had been made real to them. We must make the war real to all our foreign miners, particularly those who cannot read our papers. Our greatest chance for doing this is through their children. The children of the foreigner are, almost without exception, American to the core. As schoolboys and girls they are our best students, and through them we may hope to reach their parents and the boarders in their homes.

Foreign-speaking miners who have boys in the service should be induced to wear their service pins while at work. At each breaker building, slope or shaft, should be posted in a conspicuous place, a list of the boys who have answered the call to service. Much could be accomplished if "Colliery nights," at the local movie theater, could be arranged. At such times, the official films of the United States could be shown and explained in the different languages, in a manner to bring the war home to the men.

In closing, let me give one more proof that the miner is not of the tippling sort that many regard him. The average miner is self-reliant, able to act for himself and industrious. He longs to reach the open air when his day's work in the mine is done. It is this class of workers that find no trouble in securing work at the large factories and plants, who are in sore need of men.

People who are unacquainted with mining conditions little realize the risks taken by miners in their daily work. Men are gassed every week in the mines of Pennsylvania. These and other conditions have made them bold and fearless. It is not claimed that the miners are perfect. Many of them have not as yet caught the vision of world democracy; but for that they are not wholly to blame.

Let us do the miner justice and give him every encouragement and assistance to make him the capable worker and loyal assistant for which he is fitted. In other words, let's boost for more coal by boosting our fellows who get it out, for on them we must depend.

Jeddo, Penn. PATRIOT.

INQUIRIES OF GENERAL INTEREST

Cost of Upkeep of Mine Cars

Observation in the mining regions shows that there are, at the present time, a great number of cheap and inferior mine cars being thrown onto the market, as the result of the stringency placed on the manufacture of cars and other mining equipment by reason of the war. Many mine officials are buying these cars for use in their mines, either ignorant of or ignoring the fact of their inefficiency.

At this time when coal must be produced in greater quantity than ever before, the efficiency of all mine equipment is of the greatest importance and should have equal consideration with that of producing a large output of coal. Not only this, but the fact should be noted that the future of the coal industry is being impaired by the installation of inferior equipment.

Any man of ordinary intelligence who will stop to think for a moment will realize that the difference in cost between a good mine car and a makeshift is so slight as to bear no comparison with the gain that would result from the employment of good mine cars and the best possible grade of other equipment. A cheap mine car is a source of constant expense for repairs, to say nothing of the frequent delays and consequent loss, by reason of wrecks and breakdowns, caused either by broken drawbars, split planks, broken or sprung bolts, wornout wheels and, last but not least, bent or broken axles.

System in Recording Cost of Repairs

In this connection, I am moved to ask if any of the readers of *Coal Age* have available records of accurate costs of the upkeep of either plain- or roller-bearing mine cars. Also, whether they have any figures on the cost of repairing cars in a haphazard or makeshift fashion, as compared with the cost of keeping them in proper condition, by employing a regularly appointed mine-car repairer who understands his business and can systematize the work and lessen the cost for repairs and upkeep of all equipment.

Allow me to instance the case of a mine, in the metal country, that has recently come to my knowledge. The mine had in use only 230 mine cars or "trams," as they are called out there. With this equipment, they saved slightly more than $5000 in a year's time, by placing a competent man in charge of their repair work and upkeep, including the oiling of the cars.

Formerly, at this mine, the company had employed what they describe as a hit-or-miss method where no system was used and repairs were made by anyone and at any time that was most convenient for that purpose. It goes without saying that there was no selection of proper material, no duplication of parts, nor any systematic arrangement; but each car presented a proposition all its own and was patched and mended accordingly.

The most casual observation shows that practically every mine has more or less cars laid up for minor causes, such as I have mentioned. Frequently a car will be laid aside for days at a time, owing to some slight cause that could be remedied in a short time and the car again put in use. This would not happen if a man were placed in charge and made responsible for this work. His daily report to the superintendent or manager would show what was being done and keep that official in touch with conditions that need his constant attention if there is to be no interruption in the daily production of the mine.

Most of the repairs on mine cars are a simple matter. A broken plank needs to be taken out and a new one put in its place; an axle has to be straightened, or its fastenings made more secure; wornout wheels must be replaced by new ones; a broken drawbar mended; or numerous other similar repairs require to be made if the rolling stock is to be kept in good condition.

This work should be done as soon as the first signs of trouble appear; but, around most mines, minor repairs are postponed until something serious happens as a result. The condition is illustrated by the old ditty that runs, "For want of a nail the shoe was lost; for want of a shoe the horse was lost; for want of a horse the rider was lost; and all for want of a horseshoe nail." So it is with the many little repairs that are continually needed by mine cars.

In urging the discussion of this question and the submission of comparative costs of haphazard and systematic methods of dealing with repair work in mines, let me suggest that the running gear of a mine car should receive special attention. Suitable thrust washers should be provided to take up the play caused by wear, which will thus be reduced to a minimum. Wheels should be oiled regularly, a plain-bearing wheel requires to be oiled at least four times a week and a good roller-bearing wheel every few months. Until this question is more thoroughly understood and given attention, haulage costs in mines will be excessive and the production of coal will suffer. Let us have comparative cost-sheets that will teach their own lesson. OBSERVER.

Pittsburgh, Penn.

The proposition presented in this inquiry has not been overstated in respect to its importance to the economical production of coal. Cost accounting in respect to supplies of material and labor in coal mining is no greater in importance than is the cost of upkeep or maintenance of haulage and other equipment. Immense good will result from the practical discussion of these questions and the submission of comparative cost-sheets, as suggested by the correspondent. *Coal Age* will gladly give space for the publication of such data, which will prove most beneficial to the coal industry in the present need of the country. We hope for a generous response to this timely inquiry.

EXAMINATION QUESTIONS

Miscellaneous Questions

(Answered by Request)

Ques.—How many aircourses 5 x 4 ft. will be required to give the same sectional area as one 8 x 10 ft.? Which will pass the more air, and why?

Ans.—The sectional area of each of the smaller airways is $4 \times 5 = 20$ sq.ft., while that of the larger airway is $8 \times 10 = 80$ sq.ft. The number of smaller airways required to give the same sectional area as the larger ones is, therefore, $80 \div 20 = 4$ airways.

Assuming that each of the four smaller airways has the same length as the longer airway, and that the unit pressure producing the circulation in each of the airways is the same, the larger airway will pass the larger quantity of air. The sectional area, length and unit pressure being the same in each case, the quantity of air in circulation will vary inversely as the square root of the perimeter. In other words, the quantity ratio is then equal to the square root of the inverse perimeter ratio.

In this case, comparing the circulation in the four small airways with that in the large airway, the sum of the perimeters of the four smaller airways is $4 \times 2 (4 + 5) = 72$ ft., while that of the larger airway is $2(8 + 10) = 36$ ft. The perimeter ratio is therefore, in this case, $72 \div 36 = 2$. The larger airway will therefore pass $\sqrt{2} = 1.414$ times the quantity of air passing in the four smaller airways under the same pressure.

Ques.—If a water gage, placed in a door 4 ft. 6 in. high and 5 ft. wide, shows a reading of 2.7 in., what is the total pressure on the door?

Ans.—A water gage of 2.7 in. indicates a pressure of $2.7 \times 5.2 = 14.04$ lb. per sq.ft. The area of the door, in this case, is $4.5 \times 5 = 22.5$ sq.ft. The total pressure on the door is, therefore, $14.04 \times 22.5 = 315.9$ lb.

Ques.—With a water gage of 0.4 in. we are producing 35,000 cu.ft. of air per min. What quantity will we get with a water gage of 0.9 in.?

Ans.—For the same condition in the mine or airway, the quantity of air in circulation varies as the square root of the pressure or water gage. In other words, the quantity ratio is equal to the square root of the water-gage ratio. In this case, calling the required quantity of air circulated by 0.9 in. of water gage x, we have

$$\frac{x}{35{,}000} = \sqrt{\frac{0.9}{0.4}} = \sqrt{2.25} = 1.5$$

$$x = 1.5 \times 35{,}000 = 52{,}500 \text{ cu.ft. per min.}$$

Ques.—What should a mine foreman do when he employs a new man?

Ans.—When employing a new man, the foreman should examine his credentials to ascertain where he has worked previously, and find out what are his experience and capabilities. Before permitting him to proceed to work, the foreman must be assured that the man is able to take care of himself in the mine and instruct him in regard to the rules and regulations that must be observed.

Ques.—What are the principal causes of mine fires in coal mines, and what precaution should be taken to guard against them?

Ans.—Mine fires occur most frequently as the result of lack of care in the work of blasting. Frequently, a gas feeder will be ignited by a blast and will not be discovered until the men enter the mine for work, or the fireboss makes his morning examination. By that time, the coal has become ignited, and the fire may have gained considerable headway. To avoid this condition, where blasting is done in mines generating gas, it is necessary that an examination be made following the firing of shots in the mine.

In mines where the coal is highly inflammable, and much dust accumulates in the working places, there is liability of spontaneous combustion taking place, especially if the fine coal and slack is stored in the waste. To avoid this difficulty, all fine coal and dust should be loaded out of the mine.

Many fires occur in mines owing to the careless use of open lights, or from the improper wiring of electric installations. To avoid such happenings, mine stables, tool shanties, and all other buildings should be constructed of noninflammable material. Concrete should be used wherever this is possible. Strict regulations should be enforced in regard to the use of open lamps and torches, which should never be permitted in mine stables or where hay or other combustible supplies are being handled or taken into the mine. All electrical installations should be made by a competent electrician and safeguarded in every practicable manner.

Ques.—What method of ventilation lessens the danger of an explosion and reduces friction? State your reasons.

Ans.—Splitting the air current in such a manner that each district of the mine will be ventilated by a separate air split reduces the danger of an explosion of gas or dust occurring in the mine, because the quantity of air passing in each district can then be regulated according to the need. Each district will be supplied with pure air direct from the main intake airway, instead of being ventilated by the return air from other districts, which would be more or less laden with gas.

Also, splitting the air current reduces the velocity of the air at the working face, and there is less danger of the flame of safety lamps being blown through the gauze. Should an explosion occur in one district, it is not as liable to be carried into another district as when the entire mine is ventilated by a single air current.

Splitting the air current reduces the frictional resistance by reducing the velocity with which the air is traveling. As a result, a larger quantity of air is circulated with the same power.

COAL AND COKE NEWS

Harrisburg, Penn.

Although the new anthracite wage scale, the highest ever paid, has been in effect only since the first of the month, there is already a rush of men back to the mines from munitions plants and other industries from all over the East. It is believed with the war nearing its close, there will be a continuous rush to the collieries and that by the beginning of next year the operators will again have nearly their normal forces. Since the outbreak of the war 30,000 men have left the coal regions.

Uniontown, Penn.

Coal and coke production in the Connellsville region is believed to have touched its lowest level by reason of the influenza epidemic for the week ended Nov. 2. Figures issued by Manager of Production W. L. Byers place the week's coal output at 655,227 tons, 30,925 tons below that of last week and a drop of 94,157 from the record production of Oct. 12. Conservatively the influenza epidemic in three weeks' time cut 200,000 tons from the output of this region.

An apparent listless market for coal for fuel purposes only has resulted in the machinery of the production campaign here being concentrated on byproduct coal and beehive coke. An inquiry by a local brokerage agency for fuel coal to several consumers in widely separated sections brought back the reply of a surplus stock, and other brokers make similar reports.

Much significance in that respect is attached in some quarters to a recent order of the railroad administration substituting open-top cars for box cars by the Pennsylvania Railroad company to team track loaders in this region. The order brought a strong protest from operators of that class and the date of its effectiveness was advanced to Nov. 12.

The railroad order cuts 75c. per ton from the fixed price of the team trackers' product and means their virtual elimination from the industry, they say. To the fixed price of $2.35 a ton the fuel administration permitted 75c. per ton to be added to cover the expense of hauling to the railroad siding. The order places the team tracker in the same class as the tipple loader, but the former class of operator must now bear the expense of hauling from the mines to the railroads.

The team trackers openly charge that the order was made at the instance of the fuel administration because there was no longer any great demand for coal of that quality. That charge has been denied by the regional fuel administration and the Pennsylvania Railroad company accepts responsibility. It will without doubt discourage production by the team track loaders.

Charleston, W. Va.

With more men available for work in the mines as a result of an improvement in the influenza situation in the district, and with the Baltimore & Ohio able to furnish more cars than has been the case for the last few months, production was increased somewhat in the Fairmont region during the week ending Nov. 2. So long, however, as cars are placed after the usual hour for beginning work, it will be difficult for the mines to mine coal to their capacity and to load promptly. There appears to have been a pronounced improvement in the power supply for the mines of the region during the last few days.

The hold the influenza epidemic has on the mines of the Upper Potomac region has not prevented an increase in production during the last week of 7 per cent. over the preceding week. The total output was 39,325 tons. In the western Maryland field there was an even greater percentage of increase, amounting to 26 per cent. There have been frequent appeals for more physicians and nurses in the Upper Potomac region as a means of combating the further spread of the influenza.

October coal production in the Pocahontas and Tug River districts amounted to 2,034,245 tons. Of the total tonnage produced 1,829,242 tons were shipped, that being the largest record of the present calendar year. When the fact is considered that 8000 miners were doing the work usually done by 13,000, and that there was a further hindrance of operations through influenza, both as to the mines and as to the railroads, the performance is considered notable.

Mines in the Thacker field of West Virginia suffered heavily from the blighting effect of influenza during the week ending Nov. 2. It is estimated that there was a loss in production for that period of not less than 45 per cent.

The influenza epidemic made itself more severely felt in the New River and Winding Gulf districts last week than at any time during October, other unfavorable circumstances also combining to limit the amount of coal mined. As nearly as can be determined the influenza was responsible for about 15 per cent. of the loss in the New River and Winding Gulf fields but late placements also affected production. In addition to such trouble some of the mines found it difficult to secure enough power to operate during a part of one day last week.

Tonnage mined in the Kanawha district during the week ending Nov. 2 was 18,271 less than during the week ending Oct. 26, only 162,097 tons being mined as against 180,368 for the preceding week. Practically the entire decrease was due to labor shortage, the loss in hours from that cause being 1013. Sickness among the miners of course kept many men out of the mines. Power was low for a day or so last week and that also affected production. That the car service was satisfactory is shown by the fact that only 36 hours were lost from that cause.

Birmingham, Ala.

Coal production in Alabama for the week just past will show much improvement over the output for the two weeks previous. The epidemic of influenza, which was demoralizing to the operators and the men, has spent its force and is on the wane, according to the city health officer of Birmingham. There are more men at work during the present week than at any time since the middle of last month, and the output figures will be affected accordingly.

Production Manager Sellheimer is confident that from now on the coal production will show marked increase, and that the losses of the past few weeks will be recovered. Outputs equal to those of July and August are expected within two weeks, and when developments now under way are ready for operation, still further increases in production are looked for. Railroad Administration officials are informed that there will be a larger output at the mines from now on, and are redoubling their efforts to supply the demand for cars with an adequate number.

Coal producers in the western part of Jefferson County and in Walker County feel somewhat better over the prospects of an early service on the Warrior River. In addition to the equipment formerly owned by the New Orleans and Alabama Transportation Co. and that of the Pratt Consolidated Coal Co. and the DeBardeleben Coal Co., there will be considerable new equipment placed in the service.

Coke supplies of the Birmingham district are picking up a little as coal production increases. A. H. Carpenter, coke production manager, is surveying the entire district, and is working on plans to bring about a better and clearer output of coke in the Birmingham district.

Victoria, B. C.

An increase of 75c. a ton in the selling price of coal in British Columbia was authorized by Nichol Thompson, Pacific Coast representative of the Fuel Controller, on Nov. 1. Coal for domestic uses, therefore, now costs $9.75 a ton in this Province. The further advance is the direct result of the raise of 75c. a day in the wages of the coal miners of British Columbia, which was demanded by them and granted by the officials of the Fuel Control Department a few weeks ago.

Vancouver City proposes to appoint a Fuel Administrator under the terms of an order-in-council passed by the Dominion Government authorizing both Provincial and Municipal officers to work with the Fuel Controller in fixing prices, regulating distribution and in the discharge of the many other duties of the department. Up to the present the Provincial Government has not named a Fuel Controller for this section of Canada, but Mr. Thompson is acting in the interim and it will be the duty of Vancouver's representative to protect the citizens of that city against unduly high prices and, in the event of a shortage of fuel this winter, which does not seem likely to occur, to see that the available resources are fairly allocated.

The total production of coal for the Province of British Columbia for the month of September was 164,460 tons, or a decrease of 75,777 tons as compared to the August output. This is the first month of this year that has shown a decline, and it is to be explained to a large extent by the month's strike of the miners of the Fernie and Michel collieries in the Crowsnest Pass Field. This is responsible for a loss of at least 50,000 tons, the August return from these mines being 78,971 tons as against 17,784 tons for the month under review. There also should be taken into consideration Labor Day, five Sundays, and a 30-day month, as well as the Nanaimo accident, in which some sixteen miners were lost when the hoisting cable in No. 1 shaft, Protection, Western Fuel Co., broke and let a descending cage fall.

Seattle, Wash.

A great scarcity of men is being experienced in the coal mines of Washington, and a systematic search for those who have left the occupation in recent months to enter other work is being made by officials of organized labor and where found the miner will be induced to return to the coal mines. Between 1300 and 1500 coal miners have left the mines in this state since the first of the year, and many of these have gone into shipyards and other industries where the pay is larger. But it is pointed out that now that the Macey board has in its adjustment of the shipyard wage scale throughout the country virtually lowered the wages here, that coal miners at their pay are now able to greatly exceed the earnings of the shipyard worker and some miners may return on this score.

The withdrawal of 1500 men from the coal mines of the state has been seriously affecting coal output, and it is stated that estimates since July 1 are being revised with this element given due consideration; and the conclusion reached by operators is that Washington will not exceed its output of last year and may fall considerably below. To keep pace with consumption the mines of the state must produce 5,000,000 tons of coal this year. Last year the production was a little more than 4,000,000 tons.

Martin J. Flyzig, president of District No. 10, U. M. W. A., has received a list of over 200 coal miners of the state who have left the mines for other employment and his organization is now making a systematic canvass to locate these men. It will be pointed out to them that it is a patriotic duty to return to the mines and failure to induce them to take up this work again will result in their names being returned to the Government. What further action the Government will take is not indicated in the letter sent by the Government employment bureau, but it is asking that all details regarding each case of refusal be secured.

Edmonton, Alta.

C. W. Peterson, Deputy Fuel Controller for Canada, who has been traveling through the West looking into the coal situation, states that there is no cause for panic. He held a conference with the coal dealers of Winnipeg and was gratified to learn of

the manner in which the people of that city were taking to Alberta coal, the prejudice which lately existed against it having been removed by the publicity campaign and the satisfactory results obtained from its use.

The normal importation of anthracite to the head of the Lakes is about 500,000 tons, but the allotment this year is reduced to 275,000 tons, out of which Western Ontario is allotted approximately 70,000 tons, which would leave 205,000 tons available for Manitoba and Saskatchewan.

The tonnage of anthracite to be replaced by Alberta lignites is about 270,000 tons and up to Sept. 1 increased shipments had been made from the Alberta lignite mines to Manitoba and Saskatchewan amounting to 267,000 tons, so that, allowing for the difference in heating power on a basis of three tons of lignite to two of anthracite, the situation was well in hand.

As increased shipments of lignite to points in Alberta for the period up to Sept. 1 were 112,000 tons as compared with last year, it is clear that the basis on which the winter is started is equal to that of last year. Everything, however, depends on the normal winter output of lignite being maintained in Alberta. The present epidemic has had the effect of closing a number of mines, notably in the Drumheller district. If this condition should last for any considerable period the effect may be very unfortunate, as the prairie country is absolutely dependent on current shipments from Alberta. Early in the season complaints were received from the fuel administrators of Manitoba and Saskatchewan to the effect that the quality of shipments of lignite was in some cases far below standard and that inferior grades had been offered to the public under false designations. This led to regulations being prescribed by the Fuel Controller and ratified by order-in-council establishing a system of inspection at the Alberta mines.

PENNSYLVANIA

Anthracite

Hazelton—Although handicapped by a 25 per cent. shortage in labor as a result of wartime conditions, the G. B. Markle Coal Co., largest anthracite producer in the world, has exceeded its former record of 1,500,000 tons mined in the past fiscal year, which ended Nov. 1. The output is nearly 100,000 tons more than during the previous twelve months.

Alden—Because all the shaft engineers are ill with influenza the Alden Coal Co. was unable to operate its colliery on Nov. 7, but is making an effort to have sufficient number of engineers on hand to get the colliery in operation as early as possible. The influenza is playing havoc with the employees of this company, as out of 750 employees only 292 reported for work on Nov. 4. It is thought that many of these were idle, because of the illness of themselves or of that of some member of the family.

Bituminous

Uniontown.—Reports made to the fuel administration by operators show that during the period of the saloon closing order, the averaged output per man was increased one ton per day. Another operator not affected by the epidemic reported a normal labor supply the day after pay day, a most unusual record in this region.

Pittsburgh — The influenza situation in central and western Pennsylvania is improving rapidly and the reduced outputs of the mines increasing. The betterment is slow, however, due to the weakened condition of the men following the disease. It will probably be at least two weeks before all the men are at work and able to do a normal day's work.

WEST VIRGINIA

Bluefield—With the installation of additional machinery, the Roberts Coal Co. at Glamorgan is making much progress in its efforts to increase production. R. R. Roberts is the general manager.

Bluefield—A new opening has been driven by the Norton Coal Co. at Norton into a 6-ft. vein. Work is progressing on the grading for a new tipple. The company has also had built 25 additional dwellings for miners.

Norton—As a means of increasing its output the Hawthorne Coal Co. has put up a new tipple. Because of the large number of additional miners needed, it has also been arranged to build 60 houses, 50 of which have been completed. M. Presley is the superintendent in charge.

Morgantown—Fully 50 per cent. of the miners in the Monongalia field were off during the greater part of the week ending Nov. 2, with influenza, according to a personal investigation made by C. F. Ice, chief inspector in the Fairmont region. As a result operations were materially crippled in that section.

Wheeling—N. J. Virgin and J. J. Herbert, well known mining men of Moundsville, W. Va., formerly with the Parrs Run mine of the Mineral State Coal Co., have leased and will operate the Schaub mine, owned by the Schaub Bros. & Howard Coal Co. The name of the new firm will be the Virgin-Herbert Coal Co.

Bluefield—Extensive improvements have been made by the Virginia Iron, Coal and Coke Co. Not only has a large and modern tipple been put up, but many new houses have been erected for miners. With the installation of mining machines the company is also arranging to speed up production as much as possible.

Dunbar—A new colliery is being built by the Stonega Coal and Coke Co. at Dunbar, on the Roaring Fork Division of the Interstate R.R. The mines are to be electrically equipped throughout, all machinery having been purchased. With an ultimate capacity of 1500 tons a day, the company expects to begin the shipment of coal early next year. The general manager of the company is R. E. Taggart.

Elkins—Among the newest operations at Adrian, which has become one of the principal coal-producing points on the Coal & Coke during the last year, is that of the Miller Coal Co., whose plant was only recently completed and put in commission. The plant includes a modern tipple. About two cars of coal a day are now being shipped, but this will probably be increased as soon as the plant is in full operation.

VIRGINIA

Clinchfield—The International Coal Products Co., of which Charles H. Smith is president, will build a plant at this place to distill coal to recover totuol, benzol and other coal tar products. The Government will purchase the distilled products. The Clinchfield Carbocoal Corporation will operate the plant.

INDIANA

Boonville—William R. Tapper wishes to develop a strip mine and is seeking a right-of-way from the Southern Railway Co., two miles south of Boonville. Condemnation proceedings have been brought by Mr. Tapper against the Big Four Coal Co. and adjacent property owners to secure the switch from the Southern Ry. The Big Four Coal Co. is resisting the right-of-way.

ILLINOIS

Bethalto—The reopening of a mine here by a company composed mostly of residents of East St. Louis has disclosed that there is a vein of sufficient thickness to be commercially profitable, and of unusually high quality. State authorities have found that the coal tests four points higher than other Illinois coal for steam and heating purposes. The vein has a roof of limestone.

Shelbyville—The Tower Hill Coal mine at Tower Hill, near here, which has been operated for a year under the stimulus of high prices, has now been closed down permanently. Officials of the company say they have been operating at a loss for several months and working conditions have become dangerous because of the settling of the earth. Most of the 130 miners who have been employed in the mine will move to other localities.

Belleville—For the purpose of increasing the production at the Avery mine here, a joint production committee has been created, composed of three representatives of the company and three representatives of the miners. The company representatives are John Green, Carl Heidinger and John Meyer. The miners' representatives are Peter Boatman, Joseph Lawton and Herman Weber. Any question upon which the committeemen are unable to agree will be referred to the Fuel Administration.

TENNESSEE

Briceville—The tipple and boiler house of the Cross Mountain Coal Co. of this place caught fire on the night of Nov. 4 and burned down completely. This forces the discontinuance of loading from the Cross Mountain and Volunteer mines. A temporary tipple is being built and it is hoped that coal will soon be dumped. The tipple was a complete loss, together with its equipment. The boilers were not seriously damaged although the building was a complete loss. Steam and power were in use within 18 hours after the fire. The Cross Mountain Coal Co. expects to erect a modern tipple to replace the one destroyed.

Personals

James L. Brown has been appointed Overman at No. 7 Mine, Canadian Collieries (D) Ltd., vice Robert Brown.

Arthur C. James, statistician of the Pennsylvania Department of Mines, has been appointed to Chief Clerk of the Department. **M. H. Irwin** has been appointed to succeed Mr. James.

John G. Barbour, of Uniontown, Penn., has resigned as fuel director for Fayette County on account of the press of other work. Mr. Barbour's successor will be named from a list submitted by him at the request of Administrator Garfield.

Floyd W. Parsons, editor of "Coal Age," is one of a party of trade paper editors and publishers which sailed on Oct. 26 for England on a tour of inspection of British industry under war conditions. The trip, which is under the auspices of the British Government, will take about six weeks and will include a visit to the battle areas in France.

Sheldon Smillie, at one time superintendent for the Vinton Collieries Co., at Vintondale, Penn., and then assistant and later chief engineer for the Indiana Division of the Rochester & Pittsburgh Coal and Iron Co., has been placed in charge of the Pittsburgh office of the Wood Equipment Co. of Chicago. Mr. Smillie's mining and engineering experience make him well fitted to handle the company's product, which consists of the pneumatic rotary dump and other devices for mine car handling and control.

Obituary

Joseph Hanford, who for a number of years was superintendent of the Elkins Coal and Coke Co. at Bretz, W. Va., died Nov. 4 from pneumonia. The deceased is survived by his widow, two daughters and a brother.

Arden L. Talbott, manager and part owner of the Bell Coal Co., which operates a mine at Reynoldsville, W. Va., died Nov. 1 from injuries he received when struck by a trolley car. The deceased leaves a widow and three children.

Cyrus Echard, one of the pioneer coal and coke operators of Fayette County, Pennsylvania, died recently in Connellsville, Penn., aged 71. The deceased several years ago organized the Echard Coal and Coke Co., of which he was preseident. He leaves a son, Dr. Thomas E. Echard, of Connellsville.

Benjamin L. Flynn, general superintendent of the various operations of the Logan Mining Co., of Logan, W. Va., died on Nov. 1 of influenza. Mr. Flynn, who was well known in the Logan County field, is survived by his widow and three young sons. He was a Knight Templar and a 32nd degree Mason.

Coming Meetings

Kentucky Mining Institute will hold its winter meeting Dec. 6 and 7, at Lexington, Ky. Secretary, Charles W. Strickland, Huntington, W. Va.

American Society of Mechanical Engineers will hold its annual meeting Dec. 3-6 in New York. Secretary, Calvin W. Rice, 29 West 39th Street, New York City.

Coal Mining Institute of America will hold its annual meeting Dec. 4 and 5 in Pittsburgh, Penn. Secretary H. D. Mason, 911 Chamber of Commerce Building, Pittsburgh, Penn.

Publications Received

Annual Report of the Department of Public Works of the Province of Alberta, 1917. Unillustrated, pp. 226, 6½ x 10 inches.

Monthly Statement of Coal-Mine Fatalities in the United States, July, 1918. Compiled by Albert H. Fay. Unillustrated, 27 pp.; 6 x 9 inches.

Saving Coal in Boiler Plants. By Henry Kreisinger. Department of the Interior, Bureau of Mines. Technical paper 205. Illustrated, 24 pp., 6 x 9 inches.

How to Improve the Hot-Air Furnace. By Charles Whiting Baker. Department of the Interior, Bureau of Mines. Technical Paper 208. Unillustrated, 20 pp., 6 x 9 inches.

Boiler and Furnace Testing. By Rufus T. Strohm. Engineering Bulletin No. 1. United States Fuel Administration. Bureau of Conservation. Illustrated, 20 pp., 6 x 9 inches.

Twenty-fourth Annual Report of the Inspection of Coal Mines and Coal Production, State of Kansas. From Jan. 1, 1916, to Dec. 31, 1916. Unillustrated, pp. 243. 6 x 9 inches.

Economic Operation of Steam Turbo-Electric Stations. By C. T. Hirshfeld and C. L. Karr. Department of the Interior, Bureau of Mines. Technical Paper 204. Illustrated, 29 pp., 6 x 9 inches.

Efficiency in the Use of Oil Fuel—A Handbook for Boiler-Plant and Locomotive Engineers. By J. M. Wadsworth. Department of the Interior, Bureau of Mines. Illustrated, pp. 86, 5 x 7 inches.

Suggestions for Improved Methods of Mining Coal on Indian Lands in Oklahoma. By J. J. Rutledge and Daniel Harrington. Department of the Interior, Bureau of Mines. Technical Paper 154. Illustrated, 36 pp., 6 x 9 inches.

Methods for Routine Work in the Explosives Physical Laboratory of the Bureau of Mines. By S. P. Howell and J. E. Tiffany. Department of the Interior, Bureau of Mines. Technical paper 186. Unillustrated, pp. 63, 6 x 9 inches.

Use of the Hydrogen-Volatile Matter Ratio in Obtaining the Net Heating Value of American Coals. By A. C. Fieldner and W. A. Selvig. Department of the Interior, Bureau of Mines. Technical Paper 197. Illustrated, pp. 11, 6 x 9 inches.

Condensed Catalogues of Mechanical Equipment. With classified Directory and Engineering Data Section. Eighth annual volume, 1918. The American Society of Mechanical Engineers, New York, N. Y.. Illustrated, 812 pp., 6 x 9¼ inches.

Water-Gas Manufacture with Central District Bituminous Coals as Generator Fuel. By W. W. Odell, U. S. Bureau of Mines, and W. A. Dunkley, State Geological Survey Division. Coöperative Mining Series Bulletin 22. State of Illinois, Department of Registration and Education; Division of the State Geological Survey. Illustrated; 24 pp.; 6 x 9 inches.

List of Fuel and Petroleum Statistics. Issued by the Statistical Clearing House, Central Bureau of Planning and Statistics, Washington, D. C. October, 1918. Bulletin, 46 pp. The purpose of this bulletin is to show the principal source of statistics on fuel and petroleum. It includes both original and secondary sources and the various offices in Washington from which the tabulations may be secured by properly accredited persons.

Trade Catalogs

The Thew Underground Mining Shovel. Thew Automatic Shovel Co., Lorain, Ohio. Bulletin No. 29. Pp. 14; 8½ x 11 in.; illustrated. Describes and illustrates the essential features of an underground mining shovel.

"Come Again." Crescent Belt Fastener Co., 381 Fourth Ave., New York. Illustrated, 24 pp., 5¾ x 7½ in. Treats the subject of belting in a humorous way, and strikes at some of the old-time methods of belt-joining.

Nonpareil High-Pressure Blocks and Cement. Armstrong Cork Co., Pittsburgh, Penn. Booklet. Pp. 20, 5½ x 7½ in.; illustrated. Describes insulating material for minimizing the loss of heat from steam drums, feed water heaters, internally fired and locomotive type boilers, tanks, breechings, etc.

Giant Trucks. Chicago Pneumatic Tool Co., Chicago, Ill. Illustrated, 32 pp., 9 x 12½ in. Catalog No. 344. The chief claim made for these motor trucks is that they operate on low grade fuels. The vital features of construction are described and the specifications for the various models are given in detail.

Coppus Turbo Blower. Coppus Engineering and Equipment Co., Worcester, Mass. Catalog. Pp. 52, 5½ x 8¾ in., illustrated. Describes the Coppus blower for undergrate draft and other industrial purposes, and enumerates the advantages of mechanical over natural draft. Valuable tables and data are given concerning forced draft apparatus.

Facts. The Cutler-Hammer Mfg. Co., Milwaukee, Wis. Booklet. Pp. 8, 8½ x 11 in., illustrated. This booklet, which is printed in two colors, illustrates and describes the Dean valve control and its application to large valves. Special emphasis is laid on the fact that by the application of this control to water mains at strategic points a great deal of the damage caused by bursting water mains may be averted.

Recent Coal and Coke Patents

Mine Door. J. J. Body and M. L. Johnson, Dante, Va., 1,255,697. Feb. 5, 1918. Filed Aug. 15, 1917. Serial No. 186,389.

Grate. W. Fisher, New Orleans, La., 1,255,727. Feb. 5, 1918. Filed Nov. 8, 1916. Serial No. 130,237.

Process of Burning Solid Fuel. O. b. Evans, assignor to United Gas Improvement Co., Philadelphia, Penn., 1,267,646. May 28, 1918. Filed Jan. 3, 1916. Serial No. 69,730.

Discharge Apparatus for Ash Conveyors. A. Girtamer and R. H. Miller, assignor to American Steam Conveyor Corporation, Chicago, Ill. 1,275,015. Aug. 6, 1918. Filed June 25, 1915. Serial No. 36,195.

Mine Car Running Gear. C. R. Wald, Birmingham, Ala., 1,275,188. Aug. 6, 1918. Filed Feb. 14, 1916. Serial No. 78,128.

Dump Car. F. A. McRae, Montreal, Quebec, Can., 1,274,732. Aug. 6, 1918. Filed July 3, 1917. Serial No. 178,518.

Coal Mining Machine. I. Rudai and A. Szarka, Vestaburg, Penn., 1,274,939. Aug. 6, 1918. Filed May 6, 1918. Serial No. 232,923.

Fuel Support for Furnaces. W. J. Kunz, Milwaukee, Wis., 1,274,563. Aug. 6, 1918. Filed Jan. 24, 1917. Serial No. 144,128.

Miners' Lamplighter. M. Hendler, assignor to Dewar Mfg. Co., Wilmington, Del., 1,274,544. Aug. 6, 1918. Filed April 12, 1913. Serial No. 760,629.

Mining Machine. C. E. Davis, assignor Goodman Manufacturing Co., Chicago, Ill., 1,274,516. Aug. 6, 1918. Filed May 10, 1915. Serial No. 26,990.

Coal Pusher. I. Lemay, Sault Ste. Marie, Ontario, Can., 1,275,708. Aug. 13, 1918. Filed Nov. 26, 1917. Serial No. 203,916.

Gas Producer. A. M. Taylor, assignor General Chemical Co., New York, 1,275,789. Aug. 13, 1918. Filed Feb. 10, 1916. Serial No. 77,372.

Fire Box for Locomotives. H. D. Sawyer, Revere, Mass., 1,275,763. Aug. 13, 1918. Filed Jan. 13, 1911. Serial No. 602,432.

Industrial News

Nelsonville, Ohio—The Brush Fork Coal Co. has increased its capital from $10,000 to $20,000.

Massillon, Ohio—The capital of the Maple Leaf Coal Co. has been increased from $10,000 to $100,000.

Murray City, Ohio—The authorized capital of the Globe Coal Co. has been increased from $10,000 to $50,000.

Columbus, Ohio—The authorized capital of the Minerton Coal Co. has been increased from $25,000 to $50,000.

Manchester, Ky.—The Horse Creek Coal Co., capital $2000, has filed amended articles increasing its capital to $24,000.

Toledo, Ohio—The Rich Hill Coal Co. has been incorporated with a capital of $50,000 by W. P. Hubbs, C. M. Hubbs, G. M. Colgan, Elmer E. Davis and V. H. Weaver.

Bellaire, Ohio—The Bull Run Coal Co. has been chartered with a capital of $20,000 by Sam Zumpano, Antonio Gatto, Grace Gatto, Sanna Pizzino and Carmelo Pizzino.

Thurber, Tex.—The Texas & Pacific Coal Co. has recently filed notice of an increase in its capitalization from $4,000,000 to $5,000,000, to provide for proposed expansion.

Akron, Ohio—The H. K. M. Coal Co. has been incorporated with a capital of $50,000 by Adolph Hauer, Josef Manncz, Frank M. Kobetitis, William Boer and Emanuel Weiss.

Murray City, Ohio—The Owl Creek Coal Co. has been chartered with a capital of $36,000 by J. W. Green, E. W. Davis, Vance Webb, Charles Schulz and L. P. Mooney.

Syracuse, N. Y.—The Solvay Process Co. is having plans prepared for the construction of a large new coal thawing plant to be located at its works at Indiana Harbor, Ind.

Youngstown, Ohio—The Essential Coal Co. has been chartered with a capital of $100,000 by H. H. Miller, W. H. Smythe, W. R. Rose, Clinton J. Wall and N. C. Franklin.

Birmingham, Ala.—The Sellers Coal Co. has been incorporated with a capital of $10,000 to engage in general coal-mining operations. E. M. Sellers is the principal incorporator.

Philadelphia, Penn.—The Girard Estate, Lafayette Building, has had plans prepared for the construction of new coal pockets, about 20 x 115 ft., at Twentieth Street and Oregon Avenue.

Binghamton, N. Y.—The Powell Coal Co., 29-31 Clinton St., is planning for the immediate erection of a new one-story office building, about 30 x 55 ft., at 115 Clinton St., to cost $5500.

Dayton, Ohio—The Rice Hocking Coal Co. has been incorporated with a capital of $100,000 to mine and sell coal by W. P. Rice, J. W. Rice, H. D. Rice, J. M. McGhee and Majorie Wise.

Louisville, Ky.—The St. Bernard Mining Co. is again operating its mine at St. Charles, Ky., which was down due to 78 men being ill of influenza. Several deaths occurred in the camp.

Louisville, Ky.—The Gordon-Miller Coal and Coke Co. is planning for the erection of a new power plant at its properties for operation, and the installation of electrically driven machinery.

New Straitsville, Ohio—The Thistle Coal Co. has been incorporated with a capital of $50,000 by Frank E. Kramer, George W. Hite, David Moodie, Jr.; David Moodie, Sr., and Marion W. Bradshaw.

Youngstown, Ohio—The R. L. Culbertson Coal Co. has been incorporated with a capital of $500,000 by R. L. Culbertson, W. A. McCoy, E. B. Culbertson, J. W. Morgan and Earl B. Stilson.

Louisville, Ky.—Harlan coal operators have sent out bulletins calling attention to a 5c. per ton increase in the Federal allowed price on run-of-mine and prepared sizes from Harlan County.

Oneida, Tenn.—The Pemberton-Hibbler Mining Co., capital $50,000, has been incorporated by D. McDonald, Robert Hibbler and others to develop 1200 acres of coal land in Scott County.

Thornton, Ky.—Announcement has been made to the effect that the Elkhorn Collieries Co. will erect a new hotel, church, school and also a Y. M. C. A. building, work to start shortly after Nov. 1.

Colly, Ky.—S. T. and B. F. Wright and associates are negotiating for the acquirement of about 1000 acres of coal properties on Colly Creek under lease, and are planning for immediate development work.

Murray, Ohio—The Owl Creek Coal Co., of Murray, Ohio, has been incorporated with a capital stock of $36,000 by Vance Webb, Charles Shultz, E. W. Davis, Lewis Green, L. P. Mooney and J. W. Green.

Volga, W. Va.—J. T. Herbert and W. M. Miller, Cleveland, Ohio, and associates, have acquired approximately 300 acres of coal properties in Upshur County, W. Va., and are planning for immediate development.

Indian Head, Md.—The United States Government, Navy Department, has had plans prepared for the construction of a new coal storage basin at the local Government station, to cost approximately $125,000.

Buffalo, N. Y.—The General Anthracite Co. has been incorporated with a capital of $10,000 to engage in a general coal business. J. L. Ley, M. E. Sullivan and J. H. Watson, Buffalo, are the incorporators.

Middlesboro, Ky.—The Benite Coal Co. has been incorporated with a capital of $25,000 to operate coal properties in the Middlesboro section. S. E. and Samuel Bennett and W. M. Young are the incorporators.

Charleston, W. Va.—The Charleston Coöperative Coal Co. has been incorporated with a capital of $96,000 to operate coal mines in Kanawha County. Eugene J. and F. Fried and D. W. Dunbar are the incorporators.

Fontanet, Ind.—The Fontanet Coal Co. has been organized with capital of $30,000 to transact a general mining business. The directors are George H. Funk, S. J. Gregory, Fred B. Funk, Samuel Jaffee and John H. Gallagher.

Dayton, Ohio—Kentucky Hills Mining Co. has been incorporated with a capital of $25,000 to mine and sell coal. The incorporators are John A. Murphy, J. Francis Murphy, D. W. Allaman, R. B. Retter and D. A. Eichelberger.

Washington, D. C.—Effective Nov. 11, greater leniency is to be permitted in the use of electricity for signs and other of the less essential uses. Much of the jurisdiction in the matter has been vested in the state fuel administrators.

Pittsburgh, Penn.—The Pittsburgh-Midland Coal Co. has been incorporated under Delaware laws with a capital of $50,000 to engage in general coal-mining operations. L. A. Irwin, W. G. Singer and M. L. Rogers are the incorporators.

Covington, Ky.—The Murphy-Daugherty Coal Co. has been incorporated with a capital of $100,000 to develop coal properties in the Covington district. John T. Murphy, E. H. Daugherty and Martin Brown are the incorporators.

Scranton, Penn.—The Price-Pancoast Coal Co., Board of Trade Building, has completed arrangements for the erection of a new one-story electric plant, about 80 x 100 ft. at its properties at Throop, Penn. The structure will cost about $75,000.

Middlesboro, Ky.—The Benito Coal Co., which recently filed notice of incorporation with a capital of $25,000, is planning for the immediate development of about 631 acres of coal properties in the Evarts section. Samuel Bennett is president.

Louisville, Ky.—R. L. Watson, manager of the Byrne & Speed Co., Louisville, reports that he has on hand easily a month's supply of domestic coal in the company's local yards, and figures that most of the other retailers are in about the same boat.

Pittsburgh, Penn.—The Pennsylvania Lines West of Pittsburgh has awarded a contract to the Roberts & Shaefer Co., McCormick Building, Chicago, Ill., for the construction of a new coaling station at Mingo Junction, Ohio, of 700 tons capacity.

Philadelphia, Penn.—The Midvale Steel and Ordnance Corporation, Widener Building, has awarded a contract to the R. H. Beaumont Co., Drexel Building, for the installation of new coal- and ash-handling equipment at its Nicetown works to cost about $35,000.

Philadelphia, Penn.—Mortenthaler Brothers has awarded a contract to William F. Krelle & Co., Twenty-sixth and Oxford Sts., for the erection of a new concrete and steel trestle at its coal yards at Wolf and Swanson Sts. The structure will cost about $7000.

Morgantown, W. Va.—The Hice Coal Co. has been incorporated with a capital of $10,000 to develop coal properties in the vicinity of Morgantown. James R. Moreland, Morgantown; H. C. Kifer, Manor, Penn.; G. C. M. Hice and S. B. McNeill, Brooklyn, N. Y., are the incorporators.

Lynch, Ky.—The United States Coal and Coke Co. at a cost of $100,000 will build reinforced concrete bins, one story high, 45 x 60 x 132 ft. and 45 x 45 x 20, to take care of production awaiting shipment. The construction work will be handled by N. N. Eavenson, of Gary, W. Va.

Charleston, W. Va.—The Capital Issues Committee has granted approval of the proposed issue of securities for $150,000 by the Eagle Byproducts Co., the proceeds to be used for extensive additions to its byproduct coal plant to increase the present capacity to approximately 1500 tons daily.

St. Mary's Falls Canal, Mich.—Statistics compiled under the direction of Col. F. W. Alstaetter, Corps of Engineers, U. S. Army, show that during the month of October 3,087,728 net tons of soft coal and 403,510 net tons of hard coal passed through the Sault Ste. Marie, Michigan and Ontario canals.

Hickman, Ky.—Rains during the past few days and higher water in the Ohio are expected to result in a larger volume of western Kentucky coal moving South via the Ohio and Mississippi. The river has been so low all summer that even small boats had much trouble, and small tows were forced to double trip at numerous points.

Lynch Mines, Ky.—The United States Coal and Coke Co., Carnegie Building, Pittsburgh, Penn., has completed arrangements for the construction of a new reinforced-concrete coal bin, one-story, about 45 x 60 x 132 ft., at its local properties. The structure is estimated to cost $100,000. N. N. Eavenson, Gary, W. Va., is the contractor.

Columbus, Ohio—Announcement is made by A. H. Smith, regional director of railroads, that F. B. Sheldon, heretofore general manager of the Toledo & Ohio Central, the Kanawha & Michigan and the Zanesville & Western railroads, has been made federal manager of the above-mentioned lines. His headquarters will continue at Columbus.

Fairmont, W. Va.—The Domestic Coke Corporation has awarded a contract to the H. Koppers Co., Pittsburgh, Penn., for the installation of a battery of 60 coke ovens at its properties. The new plant will be located on a 45-acre site and it is proposed to produce about 450 gal. of toluol and 13½ tons of ammonia sulphate daily for Government use.

Charleston, W. Va.—The Kanawha Collieries Co., recently incorporated with a capital of $100,000, has taken bids for the installation of mining machinery, etc., for the development of approximately 1200 acres of coal properties in the vicinity of Swiss, W. Va. It is proposed to have a capacity of about 1000 tons daily. William G. Conley is president.

Washington, D. C.—To combat extortionate prices being charged for storing of coal in the District of Columbia, the fuel director for the District has issued an order, which reads: "All retail coal dealers are hereby directed to arrange for and store all coal delivered by them to residences, whenever requested by the purchaser, at a cost not to exceed 75c. a ton."

Uniontown, Penn.—Work has been commenced on developing a 90-acre tract of coal along the Monongahela River by the Gallatin Coal Co., consisting of Frank B. Hess, A. Q. Davis, of Uniontown, and James Baird, of Brownsville. Operations are expected to be commenced Jan. 1. Shipments will be made exclusively by river. Both Mr. Hess and Mr. Davis are interested in several other coal companies.

Henderson, Ky.—The Audubon Mining Co., operating at this point, and formerly owned by Henderson capital, has passed into the hands of a Nashville syndicate of capitalists, who for the present will operate the company under the old title. The same interests recently purchased the Uniontown Mining Co., at Uniontown, Ky. W. L. Hughes, manager of the Audubon company, will continue in charge of operations.

Charleston, W. Va.—Webster County coal lands, almost a virgin field, will undergo development if present plans of Philadelphia capitalists are carried out, the Beaver Run Coal Co. having been organized with a capital of half a million to operate mines near Holly, W. Va. The incorporators are H. Chester Johnson, Horace S. Glazier, Charles F. Pike, J. R. Ives, all of Philadelphia, and John M. L. Black, of Villa Nova, Penn.

Uniontown, Penn.—Sections of double tracks between Uniontown and Morgantown, W. Va., are being placed by the Baltimore & Ohio Railroad Company to care for the increased coal and coke traffic from the West Virginia field. The improvements were commenced last week and will continue for a period of a year or more. For some time past the Baltimore & Ohio has been strengthening its lines at different points to handle the heavy traffic.

Burgettstown, Penn.—The coal department of the American Zinc and Smelting Co. will install at its Langeloth mine, Slovan, Washington County, Pennsylvania, a complete new equipment for coal preparation. The structure will be of steel and will include shaking screens, picking tables and loading booms. C. L. Miller & Co., of Scottdale, Penn., will furnish the equipment. Baton & Elliott, of Pittsburgh, Penn., are the engineers. The work of installation will be under the direction of R. E. Bucknam, superintendent of the mine.

Lexington, Ky.—R. A. Hord, secretary of the Hazard Coal Operators Exchange and Deputy U. S. Fuel Administrator for eastern Kentucky, reports that coal mining operations as late as Nov. 7, were still handicapped by the influenza epidemic to the extent of at least 50 per cent, if not more. While conditions are clearing up somewhat in some sections others are showing an increase in the number of cases, resulting in miners becoming panicky and crippling production. With more nurses and doctors pouring into the fields he expects conditions to mend soon.

Chattanooga, Tenn.—The Suck Creek Co. has been organized to engage in the development of coal mines in the Signal Mountain territory. It is understood that a large tract, comprising several thousand acres, has been acquired under lease, and that the company is planning for immediate development. It is proposed to handle the product by incline to the Tennessee River, near the mouth of Suck Creek, and thence to Chattanooga, a distance of about three miles, in barges. Richard Hardy is president; Z. C. Patton, Jr., vice president; and George Killian, secretary and treasurer.

Uniontown, Penn.—Ninety acres of the Pittsburgh vein of coal fronting the Monongahela River have been acquired by Frank B. Hess and A. Q. Adams, of Uniontown, and James Baird, of Brownsville, who have organized the Gallatin Coal Co. to develop the tract. Work is now being rushed preliminary to opening a mine, and the company expects to commence operations by Jan. 1. Shipments will be made exclusively by river. Messrs. Davis and Hess own the Provins coke plant at Waltersburg, this district, and are also interested in the Davis Fuel Co. of Morgantown, a brokerage concern.

Toledo, Ohio—Indications point to a rather early closing of the lake season, because of the fact that the tonnage required for the Northwest has been moved and also because of a shortage of labor on the docks of the upper lake ports. So it is unofficially stated that shipments of coal from the mines for lake traffic will stop Nov. 15, and that all vessels will leave on their last trip Nov. 23. During the week ending Nov. 2 the Hocking Valley docks loaded 140,564 tons as compared with 259,572 tons during the previous week. The total loaded during the season amounts to 4,634,569 tons. During the same week the Toledo & Ohio Central docks loaded 65,000 tons as compared with 78,000 tons the previous week, making 2,017,075 tons for the season.

Washington, D. C.—Bituminous coal-producing companies over the country were called upon by J. H. Wheelwright, president of the National Coal Association, to contribute at least one-quarter of 1 per cent. of their capital stocks to the $170,500,000 United War Work Campaign Fund, the nation-wide drive for which begins Monday, Nov. 11. In addition, Mr. Wheelwright expressed the hope that all employees of bituminous coal-producing companies, estimated at more than 600,000, would give a day's pay during November to the fund. Representatives of the miners in the bituminous fields were urged to cooperate with the local war work campaign committees in "soliciting each employee to sign a pledge, the amounts thus pledged to be collected and turned over to either the local, state, or national campaign committee."

Charleston, W. Va.—Because of the restrictions placed upon them as to the territory into which they can dispose of their coal, producers in Zone "L," which includes the plants shipping over the Kanawha & Michigan, Kanawha & West Virginia Ry. and the Coal & Coke Ry. west of Dundon, have asked for a modification of the present zone limits prescribed by the Zone Permit Bureau on Oct. 10. With the present restrictions in force a limited portion of Ohio and the lower peninsula of Michigan for lump coal is the only territory into which the producers alluded to can ship. Under the new ruling, existing contracts for malleable lump coal and steam mine-run are in effect abrogated. Before the new ruling went into effect the producers in Zone "L" were permitted to ship to Ohio, Indiana and southern Michigan. Should the Zone "L" producers be able to secure a modification of the October 10 ruling this territory would be restored to them.

Washington, D. C.—A new order by the Federal Fuel Administration, effective Nov. 11, states that "the use of light generated or produced by the use or consumption of coal, oil, gas or other fuel, for illuminating or displaying advertisements, announcements or signs on the exterior of any building, or on any billboard, or other structure for the display of advertisements, announcements or signs, and the use of such light for the external ornamentation of any building or structure, or for illuminating or displaying any window in any shop or store, when such shop or store is not open for business, shall be entirely discontinued on Monday, Tuesday, Wednesday and Thursday of each week in New England, and in the States of New York, Pennsylvania, New Jersey, Delaware, Maryland, and in the District of Columbia, and shall be entirely discontinued on Monday and Tuesday of each week in the States of Michigan and Ohio, and in any state not hereinbefore mentioned, when the Federal Fuel Administrator for such state shall so order, provided however, that nothing in this regulation shall be construed to prohibit the maintenance in any shop or store window of any lights required by a state law or a municipal ordinance, or for the purpose of safety."

MARKET DEPARTMENT

Weekly Review

Cessation of Hostilities Brings Its Problems to Bituminous Operators—Consumers Well Stocked with Coal—Buyers Conspicuous by Their Apathy—Danger Ahead for Consumers Who Do Not Replenish Their Stocks—Anthracite Situation

IN RESPONSE to the Fuel Administration's campaign for a maximum coal output there was produced during the first seven months of the present coal year (April to October inclusive) 368,858,000 net tons of bituminous coal. This tonnage represents an increase of 42,437,000 net tons over the output of the similar period in 1917.

With the country driving ahead at full blast on a war program, the increased rate of production was far from being sufficient to meet the demands of industry. Industries that were considered unessential to the war program were denied the use of coal, the extent of the stocks that would be accumulated by essential industries was specified by the Fuel Administration, and a zoning system was perfected which had for its object the elimination of the cross-hauling of coal from one mining section to another. These changes, and many others even more radical, were instituted for the sole purpose of enabling the country to concentrate its energies on one thing—the carrying on of a war that would bring about a speedy peace.

Now, 19 months after our entry into the conflict the war has come to an end. Though indications were many that the German war machine was disintegrating, still the end came with a suddenness which for this country was startling. Just as in the beginning our declaration against autocracy found us unprepared for war, so the signing of the armistice on Nov. 10 finds us unprepared for peace. This is evidenced by the fact that we have not, at this writing, passed one bit of legislation looking toward a well-defined reconstruction program.

The cessation of hostilities has, if anything, brought forcibly to the attention of the soft-coal operators the realization that they are confronted by a situation that threatens to become serious. Thanks to the methods pursued by the Fuel Administration, consumers of bituminous coal in almost every section of the country have large reserve stocks on hand. To put it plainly, there is an oversupply of soft coal in the hands of consumers, and many mines that but a short time since were hard put to it to meet their production quota now find that they are unable to dispose of their output. The steel mills and the blast furnaces, for instance, are loaded down with coal, and until they can utilize their large stocks in the manufacture of peacetime products they will not come into the market for additional supplies.

The foregoing is true of almost every other industry. Buyers who a month or so ago were eager, even clamorous, to obtain a meager tonnage, are running along from hand to mouth in the hope of a break in the market that will enable them to buy fancy grades below the present Government prices. However, there is more than a possibility that these schemes will miscarry. As industries one after the other return to the manufacture of their pre-war products, and plants that were not permitted to function, or that were curtailed, resume full-time operations the shortage which now exists on paper in the Fuel Administration records may become a sad reality. Weather conditions, too, up to the present have aided those who are laying low on their purchases, and the mine workers have given of their best because they did not desire to interfere with the country's war program. Who can tell how long these favorable conditions will continue?

A quite different aspect is presented by the anthracite market. In fact, reverse what has been said of soft coal and the hard coal situation stands revealed. A shortage of labor during the entire war period, and an influenza epidemic to cap the climax, as it were, has brought the output of anthracite from April 1 to date behind the total production for the corresponding period of 1917. Estimates place the 1918 production from April 1 to November 2 at 60,588,000 net tons and 1917 production at 60,839,000 net tons. However, the discontinuance of munitions manufacture and the shutting down of other strictly war-work industries will doubtless lead to the return of many mine workers (particularly since the new wage increase in the hard coal industry has gone into effect) and before long it is possible that the output of anthracite may show the eagerly awaited upward trend.

WEEKLY COAL PRODUCTION

The production of bituminous coal during the week of Nov. 2, as in the preceding four weeks, continued on the downward grade, estimates placing the output (including lignite and coal made into coke) at 10,965,0d0 net tons, a decrease compared with the preceding week of 3 per cent. and but 0.6 per cent. over the corresponding week of 1917. The average production per working day during the current week is estimated at 1,828,000 net tons as against 1,885,000 net tons during the week of Oct. 26 and 1,816,000 net tons during the week of Nov. 2 of last year.

This is the nearest approach to the level of 1917 since last February and indicates that, unless production soon increases, the probability of a shortage, largely overcome by the record-breaking output of the past few months, will again be before the country. The epidemic of influenza still continues in some of the fields and to this, together with the unexpected warm weather generally, is attributed a temporary lull in the production and transportation of coal and in the previous strenuous industrial demand.

The production of bituminous coal from April 1 to date is 368,858,000 net tons as against 326,421,000 net tons in 1917, an increase of 42,437,000 net tons or 13 per cent.

Anthracite production continued to fall during the week of Nov. 2, estimates placing the output at 1,500,000 net tons as compared with 1,714,000 net tons during the week preceding, a decrease of 214,000 net tons or 12.5 per cent. The current week's production fell even further behind the corresponding week of 1917, the decrease amounting to 547,000 net tons, or 27 per cent. The daily average during the week ended Nov. 2 is estimated at 250,000 net tons as compared with 331,000 net tons, the daily average for the coal year to date and as against 332,000 net tons, the daily average for the coal year 1917. For the first time the production from Apr. 1 to date falls behind the total production for the corresponding period of 1917, estimates placing the 1918 production from Apr. 1 to Nov. 2 at 60,588,000 net tons and 1917 production at 60,839,000 net tons.

Carriers' reports for the week of Nov. 2 show a decrease in shipments from all districts compared with the preceding week with the exception of Cumberland-Piedmont and Somerset, Fairmont, Tennessee and Kentucky, the Illinois, Indiana and western Kentucky district and the districts west of the Mississippi River. In these fields the increase is slight while decreases during the week occurred in central and western Pennsylvania, Ohio, the district including northeast Kentucky and the high and low volatile fields of southwest Virginia and Alabama. All fields, however, report an increase in shipments for the coal year to date over the corresponding period of 1917.

Bituminous coal dumped at lake ports during the week ended Nov. 2 is estimated at 826,224 net tons, a decrease compared with the week preceding of 20 per cent. This tonnage, while low, did not fall behind the requirements outlined by the United States Fuel Administration for this period of the year, and it is now certain that the original lake program will be met before the end of November.

Shipments of bituminous coal to New England during the week ended Nov. 2 are estimated at 473,932 net tons, an increase over the shipments of the week preceding of 7 per cent. This increase is attributed mainly to extremely heavy movement of tidewater shipments during the current week, exceeding the performance of the week preceding by approximately 21 per cent., while rail receipts declined 21 per cent. Shipments also increased from all harbors and with the exception of Hampton Roads exceeded the weekly average for the coal year to date. Rail receipts as well as the total coal to New England fell behind the weekly average.

Tidewater shipments of bituminous coal from all harbors during the week ended Nov. 2, estimated at 819,761 net tons, are

approximately the same as the shipments during the week of Oct. 26 and fell behind the weekly average for the coal year to date by approximately 8 per cent. Shipments during the week of Nov. 2 increased slightly from Baltimore, while shipments from New York, Philadelphia and Hampton Roads fell slightly behind. Compared with the weekly average, Baltimore was the only port reporting an excess.

The operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania report production of beehive coke during the week of Nov. 2 at 339,139 net tons and the operation of their plants at 73.1 per cent. as against 73.9 per cent. during the week preceding. A slight improvement was noted during the week in labor conditions.

The production of beehive coke in the United States for the week ended Nov. 2 is estimated at 558,000 net tons, a decrease of 6 per cent. compared with the week preceding and 4 per cent. compared with the corresponding week of 1917. The daily average is estimated at 93,000 net tons as against 99,000 net tons during the week of Oct. 26 and 97,000 net tons during the week of Nov. 2 of last year. For the calendar year to date beehive coke production is estimated at 26,104,758 net tons as against 28,186,100 net tons during the same period of 1917 or a decrease of 2,081,342 net tons or 7.4 per cent.

The production of byproduct coke in the United States during the week ended Nov. 2 is estimated at 577,006 net tons, as compared with 434,881 net tons during the corresponding week of 1917, or an increase of approximately 33 per cent. The production during the current week was brought about by the operation of the byproduct plants at 89.6 per cent. of their full time. Out of a total loss of full time of 10.4 per cent. 1.1 per cent. is attributed to lack of coal, 1.2 per cent. to labor shortage, 6.3 per cent. to repairs to plants and 1.8 per cent. to other causes.

Operating conditions failed to equal those of the preceding week in Illinois, Maryland, Minnesota and Ohio. In Illinois, the output of the plants was limited by both shortage of coal and repairs to plants, in Ohio by repairs to plants and other causes, in Maryland by shortage of labor, and in Minnesota by other causes. No material improvement was reported by the operators in any of the states.

Recalculation of even capacity causes an increase in capacity to be reported for certain states.

For the calendar year to date, the production of byproduct coke is estimated at 21,365,278 net tons, as compared with 18,830,410 net tons, or an increase of 13.4 per cent. The total production of beehive and byproduct coke, for the calendar year to date, estimated at 47,500,000 net tons, is but slightly in excess of the total production during the corresponding period of 1917. Of this 1918 total, approximately 45 per cent. is byproduct coke and 55 per cent. beehive, while during 1917, 40 per cent. of the total production was byproduct and 60 per cent. beehive.

Atlantic Seaboard

BOSTON

Heavy dull market. Steam plants stuffed with coal. Enough to last until April, in most cases. Cancellations general. Many consumers have difficulty with hot coal. Buyers feel that prices are sure to be lower in the spring. Hampton Roads dispatch fair. Something of a problem to place coal arriving at this end. "Storrow coal" at Baltimore shut off. Same action likely to be taken at New York piers. All-rail movement still further reduced. Few box cars now coming through. Rumored that New England Fuel Administrator may soon relinquish active handling of bituminous. Recent raising of limits for greenhouses, etc., has effect only locally and to very small degree. Railroads well stocked. New England holds no encouraging sign for operators who hope for full mining this winter. Anthracite receipts about on October level. Rail receipts slightly off, but water deliveries somewhat improved. Surplus of broken and pea being worked off very slowly. Latest advance accepted with little comment.

Bituminous—The trend of the war is having its effect on the market. Only a few weeks ago a large number of buyers were ready to take on extra supplies beyond the permissible stock limits imposed by the fuel authorities, and only the very rigid embargoes in force prevented them from doing so. Now all this is changed. The average steam-user is quite content with his present reserve and is indifferent to coal shippers who plead their good service under other conditions in order to move coal for which there is today only a restricted and dull market.

One of the natural consequences of such a situation is the number of cancellations of contracts entered into in good faith last spring and for the most part through regular channels. In the great anxiety to get shipments forward many buyers availed themselves of the service of the Fuel Administration, especially during August and September, not foreseeing that the same reasons which made possible volume shipments through the fuel authorities would shortly make way for similar deliveries through trade channels. The net results is that many consumers have had their storage so completely filled with coal requisitioned by or through state administrators that they are now utterly unable to take on deliveries due them on contracts from shippers and distributors who have been their regular sources of supply.

While the number of loadings for New England are much less than normal, the present dispatch at Hampton Roads is more satisfactory than for several weeks. Barges recently at the piers for New England destinations have been detained but three or four days on the average. For reasons already stated it becomes more and more of a problem to place cargoes at this end, even where choice grades of Pocahontas and New River are concerned, and storage at the various rehandling plants is being taxed to capacity. Distributors who are without such facilities are obliged to allow the coal to move offshore or on Government requisitions.

Coal that latterly has been moving to Mr. Storrow's order at the Baltimore piers has now been shut off, it is understood, because the placing of it at this end caused increasing embarrassment. Similar action is likely to be taken soon with respect to "Storrow coal" at Port Reading and South Amboy. Even on Long Island Sound it is difficult to find buyers willing to accept water deliveries on current freights while all-rail coal can be had as freely as now. Those with regular connections are finding no difficulty at all in getting rail coal forward from regular sources of supply.

Receipts at the five New England gateways continue to show a marked falling off. The October daily average, railroad fuel included, was 507 cars, but the average daily movement for the first five days in November was but 438 cars, both commercial and railroad supply coal having dropped off to a notable extent. As compared with the month of August present all-rail receipts of bituminous are but 58 per cent.

The railroads in this territory are particularly well stocked. Both the Boston & Maine and the New Haven have reserve supplies in excess of those a year ago and correct receipts are more than ample. In many cases contractors have been urged to place the coal elsewhere, so assiduous have the fuel authorities shown themselves to dump coal on the railroads. A large number of cargoes have been absorbed in this way that would otherwise have found market only with greatest difficulty. Certainly the operator who looks in this direction to keep his mine running at the present pace through January, February and March is headed for disappointment.

It appears that prior to Oct. 1, receipts of bituminous in New England were but 15,897,748 net tons, against the 18,000,000 net tons agreed upon last spring as a six months' quota on the basis of 30,000,000 net tons for the 12 months from Apr. 1. In other words, this territory absorbed 2,100,000 net tons less than quota during the first six months. Add to this the receipts for October, about 1,330,000 tons, and every nook and cranny has been stuffed. There were many coal men last spring who believe that New England's requirements were being overdrawn, and the outcome proves the correctness of their position.

Anthracite—Very little change is noted in the receipts of anthracite. The October average all-rail was 414 cars daily of domestic sizes, while for the first five days of this month the average was but 359. It is fair to say, however, that this latter period included coal started from the mines during a week of generally light production. Water deliveries are somewhat improved. New York loading conditions are better than during October, although the proportion of stove and chestnut is still small.

The surplus of broken and pea continues an awkward problem for retail dealers. An order of the Boston Fuel Committee was issued Nov. 4 recognizing an oversupply of these sizes and directing that until further notice each sale and delivery of egg should include an equal quantity of broken, and each sale and delivery of stove or nut should include an equal tonnage of pea. Could this be carried out in every case it would doubtless be a distinct help, but there are dealers who have less broken and pea than other sizes. Moreover, there are cargoes of stove and chestnut or all chestnut coming forward on special requisition to be distributed through local boards, and the dealer who insists upon mixtures including pea coal is promptly reminded that lots of straight stove or chestnut can be had for the mere asking. No army officer or fuel authority anywhere but always takes pains to requisition stove and chestnut, leaving other sizes to the rest of the community.

NEW YORK

Anthracite receipts far below requirements, and consumers are urged to use the smaller sizes wherever possible. Fuel Administration allows retail dealers to increase prices 95c. Mayor Hylan told to stop survey and keep hands off. Dumpings show decrease. Bituminous in good shape, with coal moving freely.

Anthracite—Receipts of domestic sizes of anthracite continue to be just about enough to meet immediate requirements. No dealer receives sufficient to take care of the needs of his customers while nearly all dealers have more than enough Buckwheat No. 1 and the smaller coals than they require.

The new price schedule announced on Nov. 7 was a surprise to some producers and shippers who looked for a larger advance in view of the wage increase granted the mine workers. While the operators are given an advance of $1.05 per ton at the mine, local retail dealers have been permitted to increase their delivery price 95c. per net ton. The new price will not affect those who buy in 100-lb. lots or less; who will continue to pay at the rate of 60c. for 100 lb. when the coal is called for at the peddler's cellars and 70c. for 100 lb. when delivered at homes. In yards or coal pockets with facilities for handling coal rapidly small consumers will be able to buy coal at 55c. for 100 lb. on the cash-and-carry basis.

Dumpings of anthracite at the local docks for the week ended Nov. 8 show a falling off from the figures for the previous seven days. The reports show that there were 4997 cars dumped as compared with 6425 cars the previous week, a decrease of 1328 cars, a considerable number with conditions as they now exist.

The local situation has been aggravated some by a strike of men employed on railroad tugs. Upward of 800 men quit work and refused to go back until the Federal authorities intervened and promised the strikers arbitration of their demands, one of which was an 8-hour day. While this trouble existed shipments were further delayed by a strike of coal loaders at some of the docks.

There is no stove or chestnut coal to be had and a small tonnage of egg is available. Broken and pea are in fairly good shape and consumers of the domestic sizes are being urged to use either Buckwheat No. 1 or the smaller sizes of anthracite by mixing them with the larger coals. However, the situation is not alarming. The dealers are not being urged to make deliveries, which only makes stronger the belief that consumers are well supplied.

The allotment of domestic sizes for New York City of the 1918-1919 season has been reduced 4557 tons according to an announcement made last week, which leaves the allotment now at 8,001,418 tons. This deducted tonnage, together with deductions from other communities throughout the state, will be divided among other towns and cities in New York State.

There is an abundance of Buckwheat No. 1 and the smaller coals to be had. Household consumers are being educated in their use. Rice is not so much in evidence as buckwheat, barley or culm.

Mayor Hylan, who ordered the Police Department to make a coal survey of the factories and homes in Greater New York, received a rebuke when he received a telegram from Dr. Garfield to stop interfering with the distribution plans of the Government. The Mayor was informed that State Fuel Administrator Cooke was in charge of the coal situation here. The Mayor's plan did not find favor with Mr. Cooke or the trade, and the former took the matter up with Dr. Garfield. However, despite Dr. Garfield's telegram the police started the survey.

Current quotations, per gross ton, f.o.b., tidewater, at the lower ports are as follows:

	Circular	Individual		Circular	Individual
Broken	$7.80	$8.55	Buck	$5.10	$5.90
Egg	7.70	8.45	Rice	4.65	5.10
Stove	7.95	8.70	Barley	4.15	4.30
Chestnut	8.05	8.80	Boiler	4.60	
Pea	6.55	7.30			

Quotations for domestic coals at the upper ports are generally 5c. higher on ac-

count of the difference in freight rates. Prices in Buckwheat No. 1 and the smaller sizes of anthracite coal are not fixed by the Government.

Bituminous—The peace rumors have had a telling effect on the bituminous situation. With the market apparently well supplied and the New England situation in good shape, shippers are looking into the future, while consumers are not anxious to have large shipments added to their stocks already on hand. There is a sufficient supply of commercial coals here for all immediate needs and manufacturers are more particular now as to what they receive than formerly, inasmuch as most of them have good sized stocks on hand.

With the discontinuance of Lake shipments this week and the reported decision of the New England Fuel Administrators that those states can get along with more than two million tons less coal than was originally allotted to them, shippers see the market overstocked with coal within the next few weeks unless weather conditions become such as to cause a heavy consumption.

Current quotations, based on Government prices at the mines, net ton f.o.b., tidewater at the lower ports, are as follows:

	Mine Gross	F.o.b. N. Y. Gross
Central Pennsylvania:		
Mine-Run, prepared or slack	$3.30	$5.45
Upper Potomac, Cumberland, and Piedmont Fields:		
Run-of Mine	3.08	5.23
Prepared	3.36	5.51
Slack	2.80	4.95

Quotations at the upper ports are 5c. higher.

PHILADELPHIA

Anthracite price increase announced. Delay of week causes dealers to lose. Retail prices increased. Receipts at very low ebb. No stove or nut for sale. Mild weather helps the situation. New zoning system coming. Steam coals quiet. Some washeries shut down. Bituminous easy. Better grades still scarce. Lower prices likely on some grades.

Anthracite—The increase of $1.05 per ton in the mines prices of coal has now gone into effect. Owing to the increase dating from Nov. 1, and not being announced until a week after that date, the retail men have suffered quite a loss. It is true the shipments have been light, and it looks as if the shipping companies were endeavoring to help out the coal men by giving them as little coal as possible. The retailers were in the peculiar situation of wanting coal very badly yet afraid they might get it, with the consequent loss in the retail price.

Everywhere the question is asked as to the cause of the delay between the time of announcing the wage increase and the new mines prices. All sorts of rumors are afloat, and one most frequently heard is that the variance of opinion between the operators and the Government as to the new prices was such at times that only a threat to go before Congress and ask for Government control of the mines finally induced an agreement. Another serious point of contention was the individual differential of 75c. A number of the smaller operators claimed that without this difference they would be compelled to close their mines. Once more they have won their point. Another report is that the Government put forth a plan to pool all coal and then distributed at a flat price.

With the new wholesale prices in effect from Nov. 1 representative retail prices are about as follows.

	Egg	Stove	Nut	Pea
Company shipments	$10.25	$10.50	$10.60	$9.00
Individual shipments	11.00	11.25	11.35	9.75

Broken coal also shared in the increase, but as the tonnage of this size used in the domestic trade is negligible it is not deemed worth while to quote on it. All of this coal is made on special order and sold for manufacturing use and buyers will of course be compelled to pay the $1.05 over the old circular of $5.95 for company coal and 75c. increase for individual shipments.

The trade has never before gone through a week similar to the present. It has been many months since the receipts have been so small. The stocks in the yards are also at a low ebb. The city is practically without stove and chestnut, except, of course, what is stored in the bins of the householders.

In a day or two the new zone system as worked out by the local fuel administration is to be announced to the shippers. It appears that this city's increased quota is not to be divided proportionately among the dealers, but to each zone, the zones being designated by a number.

The steam coal market is not strong by any means and there are some who claim the recent loss of that tonnage due to the idleness of the mines on account of the epidemic is all that saved the situation from becoming serious to some shippers. Some operators report buckwheat comparatively free and none can be found who will say that it is scarce. All seem fairly comfortable on rice. Barley and culm are a dead issue. The washery and river people are at their wits' ends and many have ceased work. The market for spot coal for the latter two sizes is so poor that when orders are not in hand and operators have no storage capacity, it is being thrown on the banks.

The prices per gross ton f. o. b. cars at mines for line shipment and f. o. b. Port Richmond for tide are as follows:

	Line	Tide
Broken	$5.95	$7.30
Egg	5.85	7.20
Stove	6.10	7.45
Nut	6.20	7.55
Pea	4.80	6.05
Buckwheat	3.40	4.45
Rice	2.90	3.80
Boiler	2.70	3.70
Barley	2.40	3.30
Culm	1.25	2.15

The foregoing prices cover company coal. Individual shipments on sizes broken to pea inclusive are 75c. higher. Steam sizes are sold at market prices.

Bituminous—The situation continues to be very easy. Plenty of coal is reaching the market. As is to be expected, the better grades are hard to get and some concerns are now in position where they will only take the quality suited to their particular need. As yet there seems to have been no deviation from the Government prices, but if open weather continues for any great length of time there is no reason why sales should not be made less than the Government price. At least that is the expectation in some quarters, as some grades are even now finding difficulty in making the market at the full Government figure.

BALTIMORE

Receipts of bituminous light, but little feverish anxiety is shown by consumers, who seem to feel that the end of the war will in some strange way bring relief. Hard coal scarce and people turn to substitutes.

Bituminous—While the receipts of bituminous here continue below normal, despite the effort of the Baltimore & Ohio R.R. to increase the haulage by assigning additional locomotives to the coal fields, the consuming public has assumed a sudden new attitude. Although many industries are seeing their small stocks constantly dwindling, the best posted coal men here say there is no excitement over the prospects of a serious shortage, and that many consumers are looking for the sudden termination of the war to bring them relief all at once in some mysterious manner.

During the past week the jobbers here continued to discuss the ruling which gave mines a right to bill direct on requisitioned coal, and a new phase in a supplemental order which will allow such mines to collect a reconsignment charge of 15c. a ton, while refusing them the right to collect the 15c. as a jobber's commission. The fact that the order then provides that any mine charging 15c. a ton for rebilling will automatically cut out the collection of a jobber's commission by anyone also stirred the trade. The executive committee of the national jobbers was summoned to Cleveland to discuss the situation.

A local feature here the past week was an embargo against the Canton coal pier for three days because shipping board and local public service corporation coal had clogged the terminal. During that time the harbor trade, which had no coal on hand, was hard hit by the embargo.

Anthracite—Hard coal continues scarce. The fact that the trade here is not getting enough hard coal and is not even getting the high-grade lump bituminous as a domestic substitute, as promised and urged by both the local and national fuel administrations, is causing a search for other substitutes. Among the latest is a call for reclaimed coke. Several dealers have already taken up this idea and through it may come some measure of protection to the small half ton, peck and bushel trade, which is without coal for the most part and with little prospect of getting any such fuel.

Lake Markets

PITTSBURGH

Lake shipments practically finished. Spread of influenza checked. Market firm.

Last week practically concluded lake shipments of coal from the Pittsburgh district, there being only a little belated movement this week. If it had not been for the extra demands made on the district since July, it would have been possible to complete the district's quota, as originally set, by about Oct. 15, and the coal thereby released could have been used for stocking purposes. The coal lately released from the lake movement is being distributed to essential industries and to railroads and to "semi-essential" industries. For several weeks past there has been an increased supply to retail dealers. On the whole the coal situation is a fairly satisfactory one, provided there are no great transportation difficulties in the winter.

While the full effects of the influenza epidemic are still felt in curtailment of working forces, the situation as to the progress of the disease is regarded as decidedly promising. The matter is well in hand now, with a fair supply of medical help and nurses. Much of the present absence of workmen is attributed not to their having the disease, but to their having sore arms from inoculation or to their having sickness in the family. Production is about 40 per cent. below rated capacity, based on full labor and car supplies, but the curtailment from rates previously attained is much less. Maximum production of the Pittsburgh district averaged about 1,150,000 tons a week and it is estimated, in advance of specific reports, that production is now running but little under a million tons a week.

BUFFALO

Bituminous plenty. Prospect of no further shortage. Jobbers taking courage, for free coal is appearing. Conditions at mines improving. Anthracite still scarce. Lakes close early.

Bituminous—The appearance of more and more unsold coal on the market has given consumers courage. The war situation has held up buying, as purchasers expect prices to go lower. This will surely be the case if the jobbers continue to get telegrams offering coal at the mines. Grain men say that wheat would drop to a low price if it was not held up by Government, so coal shippers and especially consumers are asking if the same is not likely soon to be the case with coal. While the over supply of coal is not large, it is ample enough to make a change in market conditions.

Already the Government has dropped the zone restriction which kept Ohio coal away from Buffalo, and there is a rumor that all zones will be given up so far as the bituminous trade goes. This encourages the jobbers, who are never wanted unless there is a shortage. Telegrams are coming in from the mines, asking jobbers if they cannot dispose of loaded cars of coal for which there is no consignee.

Anthracite—The conditions do not change. Consumers are demanding coal which the distributors are unable to provide. The apparent shortage is likely to continue most of the winter, for nobody will be satisfied until his whole winter's coal is in. When the lakes are closed the supply is likely to be increased materially, but as this is not assured the consumer is anxious. Buying of bituminous lump and anthracite buckwheat is increasing, as together they can be used in a furnace if handled properly. The work of the local fuel administrators is almost entirely confined to the anthracite trade. All industries and others that can use soft coal are directed to do so, and the entire anthracite supply is turned into the house trade.

CLEVELAND

Although the influenza epidemic has abated considerably in eastern and southern Ohio coal-mining regions, car supply continues in excess of demand. The Great Lakes season has been shortened 14 to 21 days, but in spite of the earlier closing the Northwest will get every ton of bituminous desired. Decreased lake shipments are making up for lost production. Bituminous for industrial and domestic purposes becomes more plentiful every week.

Bituminous—Talk of peace has served to narrow the local coal market, but except under out-of-the-ordinary conditions prices have not sagged under the Government maximum. A few small blocks of low-grade coal—probably not more than five or six—have been marketed here in the past few days at 50 to 75c. a ton under the maximum. As against this, several operators report good-sized sales of high-grade No. 8 coal at the full Government price.

The consensus of opinion among better informed operators is that demand for coal will show a marked and steady decline from now on, but that prices, while sagging, will not break. Not much of a reduction is anticipated for months, in fact.

Labor, operators point out, has a scale that will not expire until April 1, 1920. Railroad rates cannot be expected to be reduced much, if at all, for some time. Only in supplies can lower costs be looked for. The upshot, with decreased demand and continued high cost of operation, it is feared, will be closing of the less efficient mines and about three-day-a-week operations at the larger and better manned mines until the period of readjustment is passed. Some operators hope that a larger export coal demand than foreseen will tide them over. Others are urging that once the present maximum Government prices are removed—they figure they die legally at the technical ending of the war—the Government institute minimum prices for a while.

Anthracite—Anthracite coal conditions seem even worse than usual in contrast to the greatly improved situation in bituminous. Receipts have dropped from 75 to 90 cars a week to 50 to 60. Lake shippers are making more complaint than retailers, for the Northwest's quota is not more than 60 per cent. net, it is claimed.

Lake Trade — The unexpectedly early peace movement which, with the lack of ocean tonnage, has eliminated the planned late lake season, has pushed the end of the lake coal season even nearer than first apparent, and every move of the lake trade now is made with the view of ending shipments Nov. 23. Some coal will be dumped after that date, but the pooling operations will not take care of it and the shipper must take care of it at both ends of the route. The official statement of the Coal and Ore Exchange, of Cleveland, which has had charge of the Great Lakes pool, is that up to Nov. 1 the lower lake docks had dumped 25,633,000 tons of bituminous. This leaves 2,367,000 as November's share of the 28,000,000 tons wanted by the Northwest, and the month's quota on the schedule is only 2,400,000 tons. Coal is coming forward much slower, and the dumping is at the rate of not over 900,000 tons a week. How much better the Northwest's coal has gone forward this season can be seen from the total of 1917 shipments—only 26,828,759 tons for a season that extended until the middle of December as against 25,633,000 tons for this year up to only Nov. 1.

DETROIT

Inquiry from buyers has eased off very materially in the steam trade as well as in thecase of retailers. Anthracite is still sought. Lake trade is shrinking.

Bituminous—Inertia seems to have become a prominent feature of the coal trade in Detroit in the last few weeks. Buyers who were clamoring recently to be supplied with coal now appear to present an attitude verging on indifference. The situation affords little encouragement to jobbers and wholesalers, whose efforts to stimulate business are only moderately successful.

Industrial plants and the larger users of steam coal seem to have accumulated stocks as large as they care to hold at this time, and the situation as regards buying by retailers is almost the same. Jobbers say that both the retailers and the steam coal users have been following the advice of the Fuel Administration in stocking any kind of coal obtainable and have not always bought with discretion. The result is many retailers have heavy stocks of mine-run and are finding their customers want something else, while a good deal of domestic lump and other prepared sizes is distributed about in storage piles of industrial plants.

Anthracite—Despite the increase in receipts of anthracite in October, distribution of an initial allotment to household consumers is still far from complete. Several thousand baseburner owners are still waiting for the two tons allowed them as the maximum for starting the winter. Complaint is made that many owners of hot-air furnace heaters are holding back apparently in expectation of getting anthracite, without taking the bituminous, which the Fuel Administration makes obligatory.

Lake Trade—Vessel capacity for movement of coal to the head of the lakes is being offered in greater amount than can be accommodated by cargoes. The close of the coal shipping season is forecasted for about Nov. 23, though one large shipper is reported to be planning a later movement, providing ships are obtainable. Soft coal shipments through St. Marys River canals in October amounted to 3,193,378 tons, a new record for one month.

COLUMBUS

With the report that Germany has signed the armistice and that the war is practically over, coal men are looking about to see what will happen. The demand for steam tonnage has been curtailed to a large degree. The lake trade will soon be over.

Operators as well as jobbers believe that the war is now entirely over, except the signing of peace, and as a result the change back to normal conditions will start soon. As a consequence there is a considerable amount of mine-run and screenings on the market. All buyers are limiting their orders because of retrenchment which has now started in earnest. Lump is not so badly affected as mine-run and screenings, as dealers are still in the market for prepared sizes.

Little is doing in the domestic trade as warm weather still curtails orders from householders. Retail stocks are generally good, and many dealers have their storage capacity filled. Retailers are not inclined to buy any more mine-run but are waiting for the so called fancy grades. Stocks in the bins and cellars of consumers are larger than ever before at this time. Retail prices still continue firm at Government levels. Pocahontas is not to be had but there is a larger amount of West Virginia grades arriving.

Some cutting of steam prices is reported, but it is not yet sufficient to demoralize the market. Thin-vein Hocking prices for mine-run and slack are now the same as thick-vein prices, as the 40c. differential has disappeared. Most of the steam plants have stocks to last from six weeks to three months and possibly longer.

The lake trade is still active but indications point to an earlier closing than usual. An unofficial statement fixes the date for the last cargoes to leave lower lake ports at Nov. 23. It is known that requisitions for lake shipments have been generally filled and the Northwest will be fueled.

CINCINNATI

Mild weather has kept down demand, while the influenza has hampered production. Improvement in both respects is expected shortly.

With only one or two frosty nights, the weather continues to be unusually mild for so late in the season, especially after so warm and pleasant a month as October was; and the unexpected phenomenon of a weather market is therefore in evidence, in the face of the general prediction that demand would be in heavy volume during the entire season.

Much of this is due unquestionably to the fact that domestic consumers stored their coal during the summer to an unprecedented extent, so that demand from this source did not amount to much with the first cool weather; while the requirements of heating plants burning steam coal have likewise not been up to a normal volume, both on account of the mild weather and on account of a fair degree of storage accumulations. This, on the whole, has of course been extremely fortunate, because it has permitted the available supplies of fuel to go to essential industries; while, on the other hand, the continued prevalence of influenza in the mining districts has so limited production that had a heavy demand been experienced there would very probably have been a shortage.

Transportation has also been hampered for the same reason, although the supply of cars has been well up to the production at the mines, reduced as indicated. Lack of facilities in the mining districts for caring for large numbers of sick has prolonged the epidemic beyond the period to which it went in the cities, and as it also started later in the remote districts, it will run correspondingly later. Frosty weather and the natural course of the disease are expected to see the finish of the epidemic shortly, however.

LOUISVILLE

Market generally supplied, with demand for all grades of coal draggy, in spite of low production at the mines of less than 50 per cent. of the average year's production.

The coal business is generally dull with producer, jobber and retailer at the present time, there being practically no demand for steam grades or domestic coal. Industrial consumers appear to be well stocked, and not interested in buying, many holding back due to the peace news, which has unsettled the market as some cancellations of war contracts have been reported. Mild weather has resulted in little demand for domestic coal. Local retailers report a month's supply of lump roal on hand, and many are beginning to advertise rather extensively for business. There is a fair demand for the better grades of eastern Kentucky lump, which has been scarce all season due to the fact that producers have been mining and shipping mine-run.

A general report is to the effect that the Northwest and Lake district is loaded up, while Indiana, Ohio and Kentucky appear well stocked. The South is also well taken care of. Local jobbers report that there is no demand for Indiana coal in that state, western Kentucky coal shows a general surplus, while mine-run eastern Kentucky is also representing a surplus, there being plenty of all grades of Hazard and western Kentucky coal on the market. It is reported that other close-by markets are in the same shape, with surplus stocks on hand and no outlet.

A number of eastern Kentucky mining companies will be forced to go back to screening coal again in order to secure a ready market for lump coal, which will sell. However, how they will dispose of the screenings with the market overstocked as it now is represents a serious question.

With normal production the situation would be much more severe. However, influenza is still holding back operations in all sections of the state, there having been but little improvement shown at some points, with the result that production at the present time is between 30 and 50 per cent. of what it has been for the greater portion of the year.

BIRMINGHAM

Market conditions quiet. Demand for higher grades of steam coal fair. Domestic coal scarce, with strong inquiry. Production slowly recovering from the effects of the influenza epidemic. Transportation facilities adequate.

The market for the lower grades of steam coal is rather soft, but there is a fair demand for the better quality of this class of fuel, such as Black Creek and similar grades, and all in all trade requirements are about equal to the production, which is still far below the output maintained prior to the siege of sickness in the camps.

Domestic coal is a very scarce article and a large tonnage of regular steam product is being diverted to domestic dealers for use in filling orders in hand. Many yards which normally had large stocks on hand at this season are practically bare and are dependent on daily receipts to fill orders.

The Brookside-Pratt Mining Co. will shortly resume operations at Carbon Hill, which is a stripping operation on the Jaeger seam, work having been suspended there for several weeks while equipment was being shifted to another tract. The New Castle Coal Co. is preparing to reopen the old No. 4 Mine, at New Castle, and the necessary mine and railroad tracks are now being installed.

Coal production for Alabama for the week ending Oct. 26 was 310,041 net tons, the lowest mark reached since the Government has been recording the output. Sickness has about disappeared from mining camps now and a steady gain is being noticed in production, though several weeks will likely elapse before conditions become normal.

Coke

CONNELLSVILLE

Production continues to decline, but bottom believed to be passed. No great coke shortage. Fuel Administration could fix minimum coke prices.

Production of coke in the Connellsville region and shipments of raw coal have continued to decline, by reason of the epidemic of influenza, but the bottom is now believed to have been passed and rising production is expected to be reported beginning with this week. From the maximum rate of coke production reached this year, which was early in September, the drop has been about 15 per cent. Maximum raw coal shipments were reached early in October, and the decline there has also been about 15 per cent.

Several byproduct interests whose coal receipts from the Connellsville district have been decreased have applied to the Pittsburgh district coal distributor for relief, but except in minor instances it has been impossible for the Pittsburgh district to help out in this manner, as its own production has been curtailed by the epidemic.

Blast furnaces do not appear to be suffering seriously from lack of coke. Pig-iron production in October as a whole was at a rate 1.3 per cent. less than the rate in September, this being attributable in part to influenza among blast furnace workmen and to various other causes, including a few cases of coke shortage.

The final cessation of hostilities will not directly affect the price limit on coke.

While pig iron and steel prices generally are set by the War Industries Board, through agreement with the producers, and are reconsidered each quarter, the coke prices are set by the Fuel Administration under the Lever act, and the full powers of the Fuel Administration continue until the President issues his peace proclamation. The Fuel Administration can reduce the present maximum limits, and the law would even seem to give it full power to set minimum prices. This is a matter of interest at this time, seeing that there is now much talk in the iron and steel trade as to the desirability of the Government regulating iron and steel prices generally on their downward course from war time to peace time conditions, so as to avoid a slump. If there were such regulation in iron and steel there would naturally be regulation in coke also.

With decreased production there is no chance of furnace coke coming into the market and offerings of foundry coke have decreased. Offerings of coke screenings from old dumps are about as formerly. The market remains quotable at the set maximum limits, as follows: Furnace, $6; foundry, 72-hour selected, $7; crushed, over ¾-in., $7.30; clean screenings, over ½-in., $5.50, per net ton at ovens.

The "Courier" reports coke production in the Connellsville and Lower Connellsville region in the week ended Nov. 2 at 293,865 tons, a decrease of 8529 tons, and raw coal shipments at 216,237 tons, a decrease of 18,280 tons.

Buffalo—The market is easy and on a par with the bituminous trade. Furnaces are getting all they want and are not obliged to search for coke as they were awhile ago. This district is depending almost entirely on byproduct supplies. More ovens will be put in as soon as they can be built. Fuel coke is more plentiful, and if the price of coal declines, as one dealer already declares it has done, it will not be easy to sell breeze coke at all.

Middle Western

GENERAL REVIEW

No improvement in general market conditions. Operating conditions good. Buyers holding off in hope of a break in the market.

There is no noticeable improvement in general market conditions. As has been the case for over six weeks, however, the higher grade Illinois and Indiana coals remain fairly firm at Government price, but the poorer grades are offered freely at a discount from the Government prices. The mild weather is hindering any improvement in affairs, and orders throughout the territory are being cancelled as readily and as rapidly as they were being placed two or three months ago, when coal was hard to buy.

Operating conditions are good, and fair average tonnage will be produced from the various fields. The influenza is on the wane, and within a few days, at least, will cease to be a factor in the market or the industry, so far as the producing districts of Indiana and Illinois are concerned. The labor supply continues fair, without any radical changes, and will continue so until the cessation of fighting in Europe, after which, no doubt, there will be an improvement. The car supply is more than ample to take care of the requirements of the Mid-West district. To make sure, however, that there will be plenty of cars, one of the big railroads in this territory has discontinued giving empty coal-carrying equipment to the many stone quarries and gravel pits on its lines, and is concentrating these cars at the coal mines depending upon it.

The situation on Eastern coal, brought into the territory via the Great Lakes, is worth mentioning. The concensus of opinion is that in the spring the average dock company will have on hand a considerable tonnage of Eastern coal still unsold. This opinion is backed up by figures from one of the largest railroads serving the docks on the Northwest Lake district. These figures show a decrease of 3000 cars below last year's figures, and the decrease is growing daily. The explanation for this is that a lot of business heretofore going to the docks has been taken by the Illinois and Indiana operators.

So far as the outlook for the immediate future of the coal industry in this district is concerned, not much relief is to be looked for. The few that might perhaps be in the market are holding off, as they believe that the war will be practically over in a very short time, and they are gambling on the idea that there will be a further break in the market as soon as hostilities cease.

CHICAGO

Steam market continues weak. Mild weather has eased up domestic demand. Anthracite situation continues to arouse criticism.

One or two large buyers of steam coal were in the market this week, tempted by low prices rather than any actual need for coal. These purchases were not on a large enough scale to make any material difference in the steam market, which continues weak.

The domestic trade is still a weather proposition, and as a consequence there has been little buying for the past week. As soon as the mild weather stops, there no doubt will be a big improvement, as there has been so little buying on the part of the retail coal dealers that of necessity their coal stock must be reduced to some extent.

The anthracite situation still continues to call down upon the State Fuel Administration the wrath and disgust of the retail trade. From a source considered reliable, it was learned that there is a big tonnage of hard coal in Chicago proper—in fact, about enough to supply the average demands of the city. Irrespective of this, the anthracite cannot be marketed until the many rules and regulations of the local administration have been abrogated.

MILWAUKEE

Coal yards will enter the winter with shorter stocks of anthracite than last year. Dealers looking for an advance in prices. Deliveries of one ton to each consumer ordered.

The coal situation at Milwaukee, while not altogether satisfactory, admits of little fear of a serious famine. The prevalence of mild weather lessens the early fall consumption and contributes to the serenity of those who are still unsupplied with fuel for the winter. There is an adequate supply of bituminous coal, but stocks of anthracite are short when compared with this time last year, the leading dock company being about 150,000 tons behind in this respect. There are still about four weeks of lake navigation left, and it may be that the anthracite situation will be materially improved before cold weather sets in.

A sharp turn downward in temperature is bound to precipitate a stampede on the part of the fuelless, and, to forestall distress, State Fuel Administrator Fitzgerald has ordered dealers to deliver at least one ton of anthracite to each consumer before cold weather sets in, and to follow up the one-ton allotment in rotation and in such quantity as will keep every consumer supplied all winter. Parties using magazine heaters will be given preference over those having hot-air furnaces.

There seems to be a shortage of small sized anthracite and dealers are compelled to substitute egg size for the major part of all nut and stove size orders. The fuel administration advises consumers to break the coal to the smaller sizes if it is impossible for them to burn egg.

Prices current during the latter part of the summer and early fall are still in vogue, but dealers are expecting an advance in conformity with the recent increase in the wages of miners.

October's coal receipts aggregated 98,511 tons of anthracite and 393,252 tons of bituminous, making the receipts for the six months beginning with May 559,939 tons of the former and 3,161,129 tons of the latter. Thus far in November cargo receipts aggregate 25,203 tons of anthracite and 56,257 tons of bituminous.

ST. LOUIS

A continued quiet market, with no favorable weather conditions. A surplus from all fields and prices shot to pieces. Steam and domestic, both country and city, at a standstill and no storage coal going in. Railroad tonnage fairly good. Equipment and transportation good.

The local situation still continues to be an unsolved problem. The prevailing mild weather has upset all plans for an improved market and there is no demand at all for any kind of coal. This is not local, but is general throughout the territory adjacent to St. Louis. The "Buy Early" campaign amounted to far more than anybody expected, and it is not fully known yet as to how it is going to affect business for the next five or six weeks. Domestic business in St. Louis is absolutely at a standstill, some retailers not having their equipment out more than one or two days a week and only part of it then.

Steam plants, and especially those working on war orders, are using up their storage coal, and all other plants are going into their storage coal rather than buy on the open market, inasmuch as prices are all cut now and likely to continue so for some time, in the opinion of the buyer.

This same condition prevails throughout the country towns, and the result is that mines in the Standard field are idle because they have no place to put the coal and the prices are cut to the point where it cannot be sold at much of a profit. Standard 2-in. lump is around $1.75 to $2 and screenings can be bought from $1.25 up. Mt. Olive coal is being cut in some instances, but as a rule is holding up to the $2.55 price for the screened sizes.

In the Standard and Mt. Olive fields the bulk of the coal moving out now is for railroad uses, and this continues good. There is, of course, a decreased production at the mines that are working exclusively on railroad coal on account of the influenza epidemic, which still continues unusually severe in some mining towns.

The scarcity of water that has existed for some time past was relieved the past week by good rains. Equipment is plentiful and transportation good. A large tonnage of Mt. Olive coal, which has been moving to the north, is easing down.

Conditions in the Carterville and Duquoin fields forecast the catching up in the very near future with orders. The mines that have railroad tonnages are holding out best, but the mines working strictly on domestic coal are having a hard time right now. The northern market seems good, but the southern market is gone.

Considerable Carterville coal has been offered in the St. Louis market, and in order to move some of it it has been intimated that the Government maximum of $2.55 would be cut. In the face of this, however, St. Louis is not buying. No coal is moving in and there is no need of it. The dealers are stored to their capacity. Equipment is fairly plentiful and transportation is good.

The influenza epidemic still prevails in these districts and many mines are shorthanded although none of them at this time are idle on account of no orders and not likely to be so for some little time, anyway.

In the retail circles in St. Louis, the prices are being cut somewhat, but it is not general.

The wholesale prices are, with the exceptions, as noted:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.55@2.75	$2.55@2.75	$2.40@2.70
3x6-in. egg	2.55@2.75	2.55@2.75	2.40@2.70
2x3-in. nut	2.55@2.75	2.55@2.75	2.40@2.70
Washed:			
No. 1	3.05@3.20	3.05@3.20	.....
No. 2	3.05@3.20	3.05@3.20	.....
No. 3	3.05@3.20	3.05@3.20	.....
Mine Run	2.35@2.50	2.35@2.50	2.20@2.30
Screenings	2.17@2.32	2.17@1.32	1.50@1.60

Special preparation on Carterville is 10 cents. extra
Williamson & Franklin Co. rate is $1.10.
Other fields 95 cents.

SEATTLE

Vast amount of Western coal will supply South American countries which are furnishing this country with war supplies.

To expedite the shipments of Western coal to Chile and other South American countries, S. L. Yerkes, assistant general director of distribution for the United States Fuel Administration, is in this city making an investigation of coal mining and shipping conditions.

Coal will be exported to the Southern republics through Seattle, Portland and San Francisco if present plans mature. The coal passing through Portland will come from Utah and Wyoming, and shipments from the two states will also pass through San Francisco. The Washington and Montana shipments will continue to come through Seattle. Already 25,000 tons of Washington coal have been sent to Chile and other Southern countries. The Pacific Coast Coal Co. sent an efficiency engineer south with the first cargo, and his work in directing the change from the use of Eastern and Welsh coals is said to have been highly satisfactory. He showed the Southern consumers the most economical way to use Washington coal. There is no fixed amount of coal that must be supplied, but a great deal will be forwarded. Formerly Chile and other South American countries secured their coal from Australia and Wales. But the war cut that supply off and lack of shipping facilities and the needs in the Eastern states have cut that supply off. The United States is receiving nitrates from Chile and it is necessary that we keep her supplied with fuel. Shipping arrangements have been practically completed.